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#10

SEQUENCE LISTING

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      Goichi HONDA
      Shuji MURAMATSU
      Yukiko NAGANO

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Ser Glu Tyr Pro Pro Phe Ser His Arg Tyr Gln Arg Phe Thr Asn Ser
            35   40   45

Ala Gly Pro Pro Pro Pro Gly Phe Lys Ser Glu Phe Thr Gly Pro Gln
        50   55   60

Asn Thr Gly His Gly Ala Thr Ser Gly Phe Gly Ser Ala Phe Thr Gly
65   70   75   80

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Gln Gln Gly Tyr Glu Asn Ser Gly Pro Gly Phe Trp Thr Gly Leu Gly
                85                  90                  95

Thr Gly Gly Ile Leu Gly Tyr Leu Phe Gly Ser Asn Arg Ala Ala Thr
            100                 105                 110

Pro Phe Ser Asp Ser Trp Tyr Tyr Pro Ser Tyr Pro Pro Ser Tyr Pro
            115                 120                 125

Gly Thr Trp Asn Arg Ala Tyr Ser Pro Leu His Gly Gly Ser Gly Ser
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Tyr Gly Gly Thr Arg Arg Arg
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gtctggaaag cagcacggct ttgcctcttt ctctgattat tattataagt ggtcctcggc  180

ggattcctgt aac atg agt gga ttg att acc atc gtg gta ctc ctt ggg      229
            Met Ser Gly Leu Ile Thr Ile Val Val Leu Leu Gly
              1           5                  10

atc gcc ttt gta gtc tat aag ctg ttc ctg agt gac ggg cag tat tct   277
Ile Ala Phe Val Val Tyr Lys Leu Phe Leu Ser Asp Gly Gln Tyr Ser
          15                  20                  25

cct cca ccg tac tct gag tat cct cca ttt tcc cac cgt tac cag aga   325
Pro Pro Pro Tyr Ser Glu Tyr Pro Pro Phe Ser His Arg Tyr Gln Arg
    30                  35                  40

ttc acc aac tca gca gga cct cct ccc cca ggc ttt aag tct gag ttc   373
Phe Thr Asn Ser Ala Gly Pro Pro Pro Pro Gly Phe Lys Ser Glu Phe
 45                  50                  55                  60

aca gga cca cag aat act ggc cat ggt gca act tct ggt ttt ggc agt   421
Thr Gly Pro Gln Asn Thr Gly His Gly Ala Thr Ser Gly Phe Gly Ser
                65                  70                  75

gct ttt aca gga caa caa gga tat gaa aat tca gga cca ggg ttc tgg   469
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Ala Phe Thr Gly Gln Gln Gly Tyr Glu Asn Ser Gly Pro Gly Phe Trp
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aca ggc ttg gga act ggt gga ata cta gga tat ttg ttt ggc agc aat   517
Thr Gly Leu Gly Thr Gly Gly Ile Leu Gly Tyr Leu Phe Gly Ser Asn
        95              100             105

aga gcg gca aca ccc ttc tca gac tcg tgg tac tac ccg tcc tat cct   565
Arg Ala Ala Thr Pro Phe Ser Asp Ser Trp Tyr Tyr Pro Ser Tyr Pro
    110             115             120

ccc tcc tac cct ggc acg tgg aat agg gct tac tca ccc ctt cat gga   613
Pro Ser Tyr Pro Gly Thr Trp Asn Arg Ala Tyr Ser Pro Leu His Gly
125             130             135             140

ggc tcg ggc agc tat tcg gta tgt tca aac tca gac acg aaa acc aga   661
Gly Ser Gly Ser Tyr Ser Val Cys Ser Asn Ser Asp Thr Lys Thr Arg
            145             150             155

act gca tca gga tat ggt ggt acc agg aga cga taaagtagaa agttggagtc 714
Thr Ala Ser Gly Tyr Gly Gly Thr Arg Arg Arg
        160             165

aaacactgga tgcagaaatt ttggattttt catcactttc tctttagaaa aaaagtacta 774

cctgttaaca attgggaaaa ggggatattc aaaagttcgg tggtgttatg tccagtgtag 834

cttttttgtat tctattattt gaggctaaaa gttgatgtgt gacaaaatac ttatgtgttg 894

tatgtcagtg taacatgcag atgtatattg cagttttttga aagtgatcat tactgtggaa 954

tgctaaaaat acattaattt ctaaaacctg tgatgcccta agaagcatta agaatgaagg 1014

tgttgtacta atagaaacta agtacagaaa atttcagttt taggtggttg tagctgatga 1074

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            20                      25                      30

Asp Pro Asp Arg Met Leu Leu Arg Asp Val Lys Ala Leu Thr Leu His
            35                      40                      45

Tyr Asp Arg Tyr Thr Thr Ser Arg Arg Leu Asp Pro Ile Pro Gln Leu
    50                      55                      60

Lys Cys Val Gly Gly Thr Ala Gly Cys Asp Ser Tyr Thr Pro Lys Val
65                      70                      75                      80

Ile Gln Cys Gln Asn Lys Gly Trp Asp Gly Tyr Asp Val Gln Trp Glu
                85                      90                      95

Cys Lys Thr Asp Leu Asp Ile Ala Tyr Lys Phe Gly Lys Thr Val Val
            100                     105                     110

Ser Cys Glu Gly Tyr Glu Ser Ser Glu Asp Gln Tyr Val Leu Arg Gly
            115                     120                     125

Ser Cys Gly Leu Glu Tyr Asn Leu Asp Tyr Thr Glu Leu Gly Leu Gln
    130                     135                     140

Lys Leu Lys Glu Ser Gly Lys Gln His Gly Phe Ala Ser Phe Ser Asp
145                     150                     155                     160

Tyr Tyr Tyr Lys Trp Ser Ser Ala Asp Ser Cys Asn Met Ser Gly Leu
                165                     170                     175

Ile Thr Ile Val Val Leu Leu Gly Ile Ala Phe Val Val Tyr Lys Leu
            180                     185                     190

Phe Leu Ser Asp Gly Gln Tyr Ser Pro Pro Pro Tyr Ser Glu Tyr Pro
            195                     200                     205

Pro Phe Ser His Arg Tyr Gln Arg Phe Thr Asn Ser Ala Gly Pro Pro
            210                     215                     220

Pro Pro Gly Phe Lys Ser Glu Phe Thr Gly Pro Gln Asn Thr Gly His
225                     230                     235                     240

Gly Ala Thr Ser Gly Phe Gly Ser Ala Phe Thr Gly Gln Gln Gly Tyr
                245                     250                     255

Glu Asn Ser Gly Pro Gly Phe Trp Thr Gly Leu Gly Thr Gly Gly Ile
            260                     265                     270

Leu Gly Tyr Leu Phe Gly Ser Asn Arg Ala Ala Thr Pro Phe Ser Asp
            275                     280                     285

Ser Trp Tyr Tyr Pro Ser Tyr Pro Pro Ser Tyr Pro Gly Thr Trp Asn
    290                     295                     300

Arg Ala Tyr Ser Pro Leu His Gly Gly Ser Gly Ser Tyr Ser Val Cys
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     Ser Asn Ser Asp Thr Lys Thr Arg Thr Ala Ser Gly Tyr Gly Gly Thr
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     Arg Arg Arg
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                                                             Met
                                                               1


gcc gca gcc tgc ggg ccg gga gcg gcc ggg tac tgc ttg ctc ctc ggc    165
Ala Ala Ala Cys Gly Pro Gly Ala Ala Gly Tyr Cys Leu Leu Leu Gly
                 5               10                  15


ttg cat ttg ttt ctg ctg acc gcg ggc cct gcc ctg ggc tgg aac gac    213
Leu His Leu Phe Leu Leu Thr Ala Gly Pro Ala Leu Gly Trp Asn Asp
         20                  25                  30


cct gac aga atg ttg ctg cgg gat gta aaa gct ctt acc ctc cac tat    261
Pro Asp Arg Met Leu Leu Arg Asp Val Lys Ala Leu Thr Leu His Tyr
    35                  40                  45


gac cgc tat acc acc tcc cgc agg ctg gat ccc atc cca cag ttg aaa    309
Asp Arg Tyr Thr Thr Ser Arg Arg Leu Asp Pro Ile Pro Gln Leu Lys
50                  55                  60                  65


tgt gtt gga ggc aca gct ggt tgt gat tct tat acc cca aaa gtc ata    357
Cys Val Gly Gly Thr Ala Gly Cys Asp Ser Tyr Thr Pro Lys Val Ile
                 70                  75                  80


cag tgt cag aac aaa ggc tgg gat ggg tat gat gta cag tgg gaa tgt    405
Gln Cys Gln Asn Lys Gly Trp Asp Gly Tyr Asp Val Gln Trp Glu Cys
                 85                  90                  95


aag acg gac tta gat att gca tac aaa ttt gga aaa act gtg gtg agc    453
Lys Thr Asp Leu Asp Ile Ala Tyr Lys Phe Gly Lys Thr Val Val Ser
            100                 105                 110


tgt gaa ggc tat gag tcc tct gaa gac cag tat gta cta aga ggt tct    501
Cys Glu Gly Tyr Glu Ser Ser Glu Asp Gln Tyr Val Leu Arg Gly Ser
        115                 120                 125
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tgt ggc ttg gag tat aat tta gat tat aca gaa ctt ggc ctg cag aaa    549
Cys Gly Leu Glu Tyr Asn Leu Asp Tyr Thr Glu Leu Gly Leu Gln Lys
130                 135                 140                 145

ctg aag gag tct gga aag cag cac ggc ttt gcc tct ttc tct gat tat    597
Leu Lys Glu Ser Gly Lys Gln His Gly Phe Ala Ser Phe Ser Asp Tyr
                    150                 155                 160

tat tat aag tgg tcc tcg gcg gat tcc tgt aac atg agt gga ttg att    645
Tyr Tyr Lys Trp Ser Ser Ala Asp Ser Cys Asn Met Ser Gly Leu Ile
                165                 170                 175

acc atc gtg gta ctc ctt ggg atc gcc ttt gta gtc tat aag ctg ttc    693
Thr Ile Val Val Leu Leu Gly Ile Ala Phe Val Val Tyr Lys Leu Phe
            180                 185                 190

ctg agt gac ggg cag tat tct cct cca ccg tac tct gag tat cct cca    741
Leu Ser Asp Gly Gln Tyr Ser Pro Pro Pro Tyr Ser Glu Tyr Pro Pro
            195                 200                 205

ttt tcc cac cgt tac cag aga ttc acc aac tca gca gga cct cct ccc    789
Phe Ser His Arg Tyr Gln Arg Phe Thr Asn Ser Ala Gly Pro Pro Pro
210                 215                 220                 225

cca ggc ttt aag tct gag ttc aca gga cca cag aat act ggc cat ggt    837
Pro Gly Phe Lys Ser Glu Phe Thr Gly Pro Gln Asn Thr Gly His Gly
                    230                 235                 240

gca act tct ggt ttt ggc agt gct ttt aca gga caa caa gga tat gaa    885
Ala Thr Ser Gly Phe Gly Ser Ala Phe Thr Gly Gln Gln Gly Tyr Glu
                245                 250                 255

aat tca gga cca ggg ttc tgg aca ggc ttg gga act ggt gga ata cta    933
Asn Ser Gly Pro Gly Phe Trp Thr Gly Leu Gly Thr Gly Gly Ile Leu
            260                 265                 270

gga tat ttg ttt ggc agc aat aga gcg gca aca ccc ttc tca gac tcg    981
Gly Tyr Leu Phe Gly Ser Asn Arg Ala Ala Thr Pro Phe Ser Asp Ser
            275                 280                 285

tgg tac tac ccg tcc tat cct ccc tcc tac cct ggc acg tgg aat agg    1029
Trp Tyr Tyr Pro Ser Tyr Pro Pro Ser Tyr Pro Gly Thr Trp Asn Arg
290                 295                 300                 305

gct tac tca ccc ctt cat gga ggc tcg ggc agc tat tcg gta tgt tca    1077
Ala Tyr Ser Pro Leu His Gly Gly Ser Gly Ser Tyr Ser Val Cys Ser
                    310                 315                 320

aac tca gac acg aaa acc aga act gca tca gga tat ggt ggt acc agg    1125
Asn Ser Asp Thr Lys Thr Arg Thr Ala Ser Gly Tyr Gly Gly Thr Arg
                325                 330                 335

aga cga taaagtagaa agttggagtc aaacactgga tgcagaaatt ttggattttt    1181
Arg Arg

catcactttc tctttagaaa aaaagtacta cctgttaaca attgggaaaa ggggatattc 1241
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6

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cagtttttga aagtgatcat tactgtggaa tgctaaaaat acattaattt ctaaaacctg 1421

tgatgcccta agaagcatta agaatgaagg tgttgtacta atagaaacta agtacagaaa 1481

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atttggtatt atattatttg atgtttgctg ttcttcaaac atttaaatca agctttggac 1601

taattatgct aatttgtgag ttctgatcac ttttgagctc tgaagctttg aatcattcag 1661

tggtggagat ggccttctgg taactgaata ttaccttctg taggaaaagg tggaaaataa 1721

gcatctagaa ggttgttgtg aatgactctg tgctggcaaa aatgcttgaa acctctatat 1781

ttctttcgtt cataagaggt aaaggtcaaa tttttcaaca aaagtctttt aataacaaaa 1841

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Gly Leu Ile Ala Pro Gly Pro Thr Thr Ala Val Ser Tyr Met Ser Val
        35   40   45

Lys Cys Val Asp Ala Arg Lys Asn His His Lys Thr Lys Trp Phe Val
    50   55   60

Pro Trp Gly Pro Asn His Cys Asp Lys Ile Arg Asp Ile Glu Glu Ala
65   70   75   80

Ile Pro Arg Glu Ile Glu Ala Asn Asp Ile Val Phe Ser Val His Ile
                85   90   95

Pro Leu Pro His Met Glu Met Ser Pro Trp Phe Gln Phe Met Leu Phe
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cccagaaagg aggcgaggaa ggagggagtg tgtgagagga gggagcaaaa agctcaccct  180

aaaacattta tttcaaggag aaaagaaaaa gggggggcgc aaaa atg gct ggg gca   236
                                                  Met Ala Gly Ala
                                                    1

att ata gaa aac atg agc acc aag aag ctg tgc att gtt ggt ggg att   284
Ile Ile Glu Asn Met Ser Thr Lys Lys Leu Cys Ile Val Gly Gly Ile
  5               10              15                  20

ctg ctc gtg ttc caa atc atc gcc ttt ctg gtg gga ggc ttg att gct   332
Leu Leu Val Phe Gln Ile Ile Ala Phe Leu Val Gly Gly Leu Ile Ala
              25              30                  35

cca ggg ccc aca acg gca gtg tcc tac atg tcg gtg aaa tgt gtg gat   380
Pro Gly Pro Thr Thr Ala Val Ser Tyr Met Ser Val Lys Cys Val Asp
              40              45                  50

gcc cgt aag aac cat cac aag aca aaa tgg ttc gtg cct tgg gga ccc   428
Ala Arg Lys Asn His His Lys Thr Lys Trp Phe Val Pro Trp Gly Pro
          55              60                  65

aat cat tgt gac aag atc cga gac att gaa gag gca att cca agg gaa   476
Asn His Cys Asp Lys Ile Arg Asp Ile Glu Glu Ala Ile Pro Arg Glu
      70              75              80

att gaa gcc aat gac atc gtg ttt tct gtt cac att ccc ctc ccc cac   524
Ile Glu Ala Asn Asp Ile Val Phe Ser Val His Ile Pro Leu Pro His
 85              90                  95              100

atg gag atg agt cct tgg ttc caa ttc atg ctg ttt atc ctg cag ctg   572
Met Glu Met Ser Pro Trp Phe Gln Phe Met Leu Phe Ile Leu Gln Leu
              105             110             115

gac att gcc ttc aag cta aac aac caa atc agt taagtgtact ctcctctcat  625
Asp Ile Ala Phe Lys Leu Asn Asn Gln Ile Ser
              120             125

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              20   25   30

Gly Leu Ile Ala Pro Gly Pro Thr Thr Ala Val Ser Tyr Met Ser Val
          35   40   45

Lys Cys Val Asp Ala Arg Lys Asn His His Lys Thr Lys Trp Phe Val
      50   55   60

Pro Trp Gly Pro Asn His Cys Asp Lys Ile Arg Asp Ile Glu Glu Ala
65   70   75   80

Ile Pro Arg Glu Ile Glu Ala Asn Asp Ile Val Phe Ser Val His Ile
                  85   90   95

Pro Leu Pro His Met Glu Met Ser Pro Trp Phe Gln Phe Met Leu Phe
              100   105   110

Ile Leu Gln Leu Asp Ile Ala Phe Lys Leu Asn Asn Gln Ile Arg Glu
          115   120   125

Asn Ala Glu Val Ser Met Asp Val Ser Leu Ala Tyr Arg Asp Asp Ala
      130   135   140

Phe Ala Glu Trp Thr Glu Met Ala His Glu Arg Val Pro Arg Lys Leu
145   150   155   160

Lys Cys Thr Phe Thr Ser Pro Lys Thr Pro Glu His Glu Gly Arg Tyr
              165   170   175

Tyr Glu Cys Asp Val Leu Pro Tyr Ala Gln His Leu His His Tyr Gly
              180   185   190

Val Val Leu Glu Glu Asp His His Asp Val Pro Thr Pro Ser Ala Ser
          195   200   205

Gly Lys Ser His Leu Cys Pro Trp Asp Phe His Asp Leu Tyr Gln Tyr
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Pro Ser Gly Met Val Phe His Arg Val
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cccagaaagg aggcgaggaa ggagggagtg tgtgagagga gggagcaaaa agctcaccct 180

aaaacattta tttcaaggag aaaagaaaaa ggggggcgc aaaa atg gct ggg gca 236
                                              Met Ala Gly Ala
                                              1

att ata gaa aac atg agc acc aag aag ctg tgc att gtt ggt ggg att   284
Ile Ile Glu Asn Met Ser Thr Lys Lys Leu Cys Ile Val Gly Gly Ile
  5   10   15   20

ctg ctc gtg ttc caa atc atc gcc ttt ctg gtg gga ggc ttg att gct   332
Leu Leu Val Phe Gln Ile Ile Ala Phe Leu Val Gly Gly Leu Ile Ala
                 25   30   35

cca ggg ccc aca acg gca gtg tcc tac atg tcg gtg aaa tgt gtg gat   380
Pro Gly Pro Thr Thr Ala Val Ser Tyr Met Ser Val Lys Cys Val Asp
             40   45   50

gcc cgt aag aac cat cac aag aca aaa tgg ttc gtg cct tgg gga ccc   428
Ala Arg Lys Asn His His Lys Thr Lys Trp Phe Val Pro Trp Gly Pro
         55   60   65

aat cat tgt gac aag atc cga gac att gaa gag gca att cca agg gaa   476
Asn His Cys Asp Lys Ile Arg Asp Ile Glu Glu Ala Ile Pro Arg Glu
     70   75   80

att gaa gcc aat gac atc gtg ttt tct gtt cac att ccc ctc ccc cac   524
Ile Glu Ala Asn Asp Ile Val Phe Ser Val His Ile Pro Leu Pro His
 85   90   95   100

atg gag atg agt cct tgg ttc caa ttc atg ctg ttt atc ctg cag ctg   572
Met Glu Met Ser Pro Trp Phe Gln Phe Met Leu Phe Ile Leu Gln Leu
                 105   110   115

gac att gcc ttc aag cta aac aac caa atc aga gaa aat gca gaa gtc   620
Asp Ile Ala Phe Lys Leu Asn Asn Gln Ile Arg Glu Asn Ala Glu Val
             120   125   130

tcc atg gac gtt tcc ctg gct tac cgt gat gac gcg ttt gct gag tgg   668
Ser Met Asp Val Ser Leu Ala Tyr Arg Asp Asp Ala Phe Ala Glu Trp
             135   140   145

act gaa atg gcc cat gaa aga gta cca cgg aaa ctc aaa tgc acc ttc   716
Thr Glu Met Ala His Glu Arg Val Pro Arg Lys Leu Lys Cys Thr Phe
     150   155   160

aca tct ccc aag act cca gag cat gag ggc cgt tac tat gaa tgt gat   764
Thr Ser Pro Lys Thr Pro Glu His Glu Gly Arg Tyr Tyr Glu Cys Asp
165   170   175   180

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Val Leu Pro Tyr Ala Gln His Leu His His Tyr Gly Val Val Leu Glu
                185                 190                 195

gag gat cac cat gat gtc ccg acc ccc agt gct tct gga aaa agt cat    860
Glu Asp His His Asp Val Pro Thr Pro Ser Ala Ser Gly Lys Ser His
                200                 205                 210

ctt tgc cct tgg gat ttc cat gac ctt tat caa tat ccc agt gga atg    908
Leu Cys Pro Trp Asp Phe His Asp Leu Tyr Gln Tyr Pro Ser Gly Met
            215                 220                 225

gtt ttc cat cgg gtt tgactggacc tggatgctgc tgtttggtga catccgacag    963
Val Phe His Arg Val
        230

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tcattgttaa ttagtgacat agtaacatct gtagcagctg gttagtaaac ctcatgtggg   1983

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gacatttttc ctgtttttaaa ttctaggata gattttaaca tcctttgcgg tcccagtcca   2103

aggtaggctg gtgtcatagt cttctcactc ctaatccatg accactgttt ttttcctatt   2163
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11

tatatcacca ggtagcccac tgagttaata tttaagttgt caatagataa gtgtccctgt 2223

tttgtggcat aatataactg aatttcatga gaagatttat tccaccaggg gtatttcagc 2283

tttgaaacca aatctgtgta tctaatacta accaatctgt tggatgtggg ttttaaaaaa 2343

tgtttgctaa actacccaag taagatttac tgtattaaat ggccttcggg tctgaaaagc 2403

tttttt 2409

<210> 9
<211> 198
<212> PRT
<213> Homo sapiens

<400> 9
Met Ala Thr Leu Trp Gly Gly Leu Leu Arg Leu Gly Ser Leu Leu Ser
 1   5   10   15

Leu Ser Cys Leu Ala Leu Ser Val Leu Leu Leu Ala Gln Leu Ser Asp
            20   25   30

Ala Ala Lys Asn Phe Glu Asp Val Arg Cys Lys Cys Ile Cys Pro Pro
        35   40   45

Tyr Lys Glu Asn Ser Gly His Ile Tyr Asn Lys Asn Ile Ser Gln Lys
    50   55   60

Asp Cys Asp Cys Leu His Val Val Glu Pro Met Pro Val Arg Gly Pro
 65   70   75   80

Asp Val Glu Ala Tyr Cys Leu Arg Cys Glu Cys Lys Tyr Glu Glu Arg
                85   90   95

Ser Ser Val Thr Ile Lys Val Thr Ile Ile Ile Tyr Leu Ser Ile Leu
            100   105   110

Gly Leu Leu Leu Leu Tyr Met Val Tyr Leu Thr Leu Val Glu Pro Ile
            115   120   125

Leu Lys Arg Arg Leu Phe Gly His Ala Gln Leu Ile Gln Ser Asp Asp
    130   135   140

Asp Ile Gly Asp His Gln Pro Phe Ala Asn Ala His Asp Val Leu Ala
145   150   155   160

Arg Ser Arg Ser Arg Ala Asn Val Leu Asn Lys Val Glu Tyr Ala Gln
                165   170   175

Gln Arg Trp Lys Leu Gln Val Gln Glu Gln Arg Lys Ser Val Phe Asp
            180   185   190

Arg His Val Val Leu Ser
            195

12

<210> 10
<211> 1498
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (86)..(679)

<400> 10
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ctgtgggacc gctgggcccc cagcg atg gcg acc ctg tgg gga ggc ctt ctt   112
                               Met Ala Thr Leu Trp Gly Gly Leu Leu
                                1   5

cgg ctt ggc tcc ttg ctc agc ctg tcg tgc ctg gcg ctt tcc gtg ctg   160
Arg Leu Gly Ser Leu Leu Ser Leu Ser Cys Leu Ala Leu Ser Val Leu
 10   15   20   25

ctg ctg gcg cag ctg tca gac gcc gcc aag aat ttc gag gat gtc aga   208
Leu Leu Ala Gln Leu Ser Asp Ala Ala Lys Asn Phe Glu Asp Val Arg
                 30   35   40

tgt aaa tgt atc tgc cct ccc tat aaa gaa aat tct ggg cat att tat   256
Cys Lys Cys Ile Cys Pro Pro Tyr Lys Glu Asn Ser Gly His Ile Tyr
                 45   50   55

aat aag aac ata tct cag aaa gat tgt gat tgc ctt cat gtt gtg gag   304
Asn Lys Asn Ile Ser Gln Lys Asp Cys Asp Cys Leu His Val Val Glu
                 60   65   70

ccc atg cct gtg cgg ggg cct gat gta gaa gca tac tgt cta cgc tgt   352
Pro Met Pro Val Arg Gly Pro Asp Val Glu Ala Tyr Cys Leu Arg Cys
             75   80   85

gaa tgc aaa tat gaa gaa aga agc tct gtc aca atc aag gtt acc att   400
Glu Cys Lys Tyr Glu Glu Arg Ser Ser Val Thr Ile Lys Val Thr Ile
 90   95   100   105

ata att tat ctc tcc att ttg ggc ctt cta ctt ctg tac atg gta tat   448
Ile Ile Tyr Leu Ser Ile Leu Gly Leu Leu Leu Leu Tyr Met Val Tyr
                 110   115   120

ctt act ctg gtt gag ccc ata ctg aag agg cgc ctc ttt gga cat gca   496
Leu Thr Leu Val Glu Pro Ile Leu Lys Arg Arg Leu Phe Gly His Ala
                 125   130   135

cag ttg ata cag agt gat gat gat att ggg gat cac cag cct ttt gca   544
Gln Leu Ile Gln Ser Asp Asp Asp Ile Gly Asp His Gln Pro Phe Ala
                 140   145   150

aat gca cac gat gtg cta gcc cgc tcc cgc agt cga gcc aac gtg ctg   592
Asn Ala His Asp Val Leu Ala Arg Ser Arg Ser Arg Ala Asn Val Leu
                 155   160   165

aac aag gta gaa tat gca cag cag cgc tgg aag ctt caa gtc caa gag   640

13

```
Asn Lys Val Glu Tyr Ala Gln Gln Arg Trp Lys Leu Gln Val Gln Glu
170                 175                 180                 185
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cag cga aag tct gtc ttt gac cgg cat gtt gtc ctc agc taattgggaa    689
Gln Arg Lys Ser Val Phe Asp Arg His Val Val Leu Ser
                190                 195
```

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ttgaattcaa ggtgactaga aagaaacagg cagacaactg gaaagaactg actgggtttt 749

gctgggtttc attttaatac cttgttgatt tcaccaactg ttgctggaag attcaaaact 809

ggaagcaaaa acttgcttga tttttttttc ttgttaacgt aataatagag acatttttaa 869

aagcacacag ctcaaagtca gccaataagt cttttcctat ttgtgacttt tactaataaa 929

aataaatctg cctgtaaatt atcttgaagt cctttacctg gaacaagcac tctctttttc 989

accacatagt tttaacttga ctttcaagat aattttcagg gtttttgttg ttgttgtttt 1049

ttgtttgttt gttttggtgg gagaggggag ggatgcctgg gaagtggtta caacttttt 1109

tcaagtcact ttactaaaca aacttttgta aatagacctt accttctatt ttcgagtttc 1169

atttatattt tgcagtgtag ccagcctcat caaagagctg acttactcat ttgacttttg 1229

cactgactgt attatctggg tatctgctgt gtctgcactt catggtaaac gggatctaaa 1289

atgcctggtg gcttttcaca aaaagcagat tttcttcatg tactgtgatg tctgatgcaa 1349

tgcatcctag aacaaactgg ccatttgcta gtttactcta aagactaaac atagtcttgg 1409

tgtgtgtggt cttactcatc ttctagtacc tttaaggaca aatcctaagg acttggacac 1469

ttgcaataaa gaaatttttat tttaaaccc                                  1498
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<210> 11
<211> 221
<212> PRT
<213> Homo sapiens
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<400> 11
Met Ala Leu Ala Leu Ala Ala Leu Ala Ala Val Glu Pro Ala Cys Gly
 1               5                  10                  15

Ser Arg Tyr Gln Gln Leu Gln Asn Glu Glu Glu Ser Gly Glu Pro Glu
            20                  25                  30

Gln Ala Ala Gly Asp Ala Pro Pro Pro Tyr Ser Ser Ile Ser Ala Glu
         35                  40                  45

Ser Ala Ala Tyr Phe Asp Tyr Lys Asp Glu Ser Gly Phe Pro Lys Pro
      50                  55                  60

Pro Ser Tyr Asn Val Ala Thr Thr Leu Pro Ser Tyr Asp Glu Ala Glu
   65                  70                  75                  80
```

14

```
Arg Thr Lys Ala Glu Ala Thr Ile Pro Leu Val Pro Gly Arg Asp Glu
            85                  90              95

Asp Phe Val Gly Arg Asp Asp Phe Asp Asp Ala Asp Gln Leu Arg Ile
            100             105             110

Gly Asn Asp Gly Ile Phe Met Leu Thr Phe Phe Met Ala Phe Leu Phe
            115             120             125

Asn Trp Ile Gly Phe Phe Leu Ser Phe Cys Leu Thr Thr Ser Ala Ala
        130             135             140

Gly Arg Tyr Gly Ala Ile Ser Gly Phe Gly Leu Ser Leu Ile Lys Trp
145             150             155             160

Ile Leu Ile Val Arg Phe Ser Thr Tyr Phe Pro Gly Tyr Phe Asp Gly
                165             170             175

Gln Tyr Trp Leu Trp Trp Val Phe Leu Val Leu Gly Phe Leu Leu Phe
            180             185             190

Leu Arg Gly Phe Ile Asn Tyr Ala Lys Val Arg Lys Met Pro Glu Thr
        195             200             205

Phe Ser Asn Leu Pro Arg Thr Arg Val Leu Phe Ile Tyr
    210             215             220
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<210> 12
<211> 1864
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (153)..(815)

<400> 12
ctgagaagag cgtctcgccc gggagcggcg gcggccatcg agacccaccc aaggcgcgtc 60

cccctcggcc tcccagcgct cccaagccgc agcggccgcg ccccttcagc tagctcgctc 120

gctcgctctg cttccctgct gccggctgcg cc atg gcg ttg gcg ttg gcg gcg    173
                                    Met Ala Leu Ala Leu Ala Ala
                                     1               5

ctg gcg gcg gtc gag ccg gcc tgc ggc agc cgg tac cag cag ttg cag    221
Leu Ala Ala Val Glu Pro Ala Cys Gly Ser Arg Tyr Gln Gln Leu Gln
        10              15              20

aat gaa gaa gag tct gga gaa cct gaa cag gct gca ggt gat gct cct    269
Asn Glu Glu Glu Ser Gly Glu Pro Glu Gln Ala Ala Gly Asp Ala Pro
    25              30              35

cca cct tac agc agc att tct gca gag agc gca gca tat ttt gac tac    317
Pro Pro Tyr Ser Ser Ile Ser Ala Glu Ser Ala Ala Tyr Phe Asp Tyr
 40              45              50              55
```

15

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aag gat gag tct ggg ttt cca aag ccc cca tct tac aat gta gct aca    365
Lys Asp Glu Ser Gly Phe Pro Lys Pro Pro Ser Tyr Asn Val Ala Thr
            60              65              70

aca ctg ccc agt tat gat gaa gcg gag agg acc aag gct gaa gct act    413
Thr Leu Pro Ser Tyr Asp Glu Ala Glu Arg Thr Lys Ala Glu Ala Thr
            75              80              85

atc cct ttg gtt cct ggg aga gat gag gat ttt gtg ggt cgg gat gat    461
Ile Pro Leu Val Pro Gly Arg Asp Glu Asp Phe Val Gly Arg Asp Asp
            90              95              100

ttt gat gat gct gac cag ctg agg ata gga aat gat ggg att ttc atg    509
Phe Asp Asp Ala Asp Gln Leu Arg Ile Gly Asn Asp Gly Ile Phe Met
            105             110             115

tta act ttt ttc atg gca ttc ctc ttt aac tgg att ggg ttt ttc ctg    557
Leu Thr Phe Phe Met Ala Phe Leu Phe Asn Trp Ile Gly Phe Phe Leu
120             125             130             135

tct ttt tgc ctg acc act tca gct gca gga agg tat ggg gcc att tca    605
Ser Phe Cys Leu Thr Thr Ser Ala Ala Gly Arg Tyr Gly Ala Ile Ser
                140             145             150

gga ttt ggt ctc tct cta att aaa tgg atc ctg att gtc agg ttt tcc    653
Gly Phe Gly Leu Ser Leu Ile Lys Trp Ile Leu Ile Val Arg Phe Ser
                155             160             165

acc tat ttc cct gga tat ttt gat ggt cag tac tgg ctc tgg tgg gtg    701
Thr Tyr Phe Pro Gly Tyr Phe Asp Gly Gln Tyr Trp Leu Trp Trp Val
            170             175             180

ttc ctt gtt tta ggc ttt ctc ctg ttt ctc aga gga ttt atc aat tat    749
Phe Leu Val Leu Gly Phe Leu Leu Phe Leu Arg Gly Phe Ile Asn Tyr
            185             190             195

gca aaa gtt cgg aag atg cca gaa act ttc tca aat ctc ccc agg acc    797
Ala Lys Val Arg Lys Met Pro Glu Thr Phe Ser Asn Leu Pro Arg Thr
200             205             210             215

aga gtt ctc ttt att tat taaagatgtt ttctggcaaa ggccttcctg          845
Arg Val Leu Phe Ile Tyr
            220

catttatgaa ttctctctca agaagcaaga gaacacctgc aggaagtgaa tcaagatgca   905

gaacacagag gaataatcac ctgctttaaa aaaataaagt actgttgaaa agatcatttc   965

tctctatttg ttcctaggtg taaaatttta atagttaatg cagaattctg taatcattga  1025

atcattagtg gttaatgttt gaaaaagctc ttgcaatcaa gtctgtgatg tattaataat  1085

gccttatata ttgtttgtag tcattttaag tagcatgagc catgtccctg tagtcggtag  1145

ggggcagtct tgctttattc atcctccatc tcaaaatgaa cttggaatta aatattgtaa  1205
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16

gatatgtata atgctggcca ttttaaaggg gttttctcaa aagttaaact tttgctatga 1265

ctgtgttttt gcacataatc catatttgct gttcaagtta atctagaaat ttattcaatt 1325

ctgtatgaac acctggaagc aaaatcatag tgcaaaaata catttaaggt gtggtcaaaa 1385

ataagtcttt aattggtaaa taataagcat taattttta tagcctgtat tcacaattct 1445

gcggtacctt attgtaccta agggattcta aaggtgttgt cactgtataa aacagaaagc 1505

actaggatac aaatgaagct taattactaa aatgtaattc ttgacactct ttctataatt 1565

agcgttcttc accccaccc ccaccccac ccccttatt ttccttttgt ctcctggtga 1625

ttaggccaaa gtctgggagt aaggagagga ttaggtactt aggagcaaag aaagaagtag 1685

cttggaactt ttgagatgat ccctaacata ctgtactact tgcttttaca atgtgttagc 1745

agaaaccagt gggttataat gtagaatgat gtgctttctg cccaagtggt aattcatctt 1805

ggtttgctat gttaaaactg taaatacaac agaacattaa taaatatctc ttgtgtagc 1864

<210> 13
<211> 242
<212> PRT
<213> Homo sapiens

<400> 13
Met Asp His His Gln Pro Gly Thr Gly Arg Tyr Gln Val Leu Leu Asn
  1   5   10   15

Glu Glu Asp Asn Ser Glu Ser Ser Ala Ile Glu Gln Pro Pro Thr Ser
            20   25   30

Asn Pro Ala Pro Gln Ile Val Gln Ala Ala Ser Ser Ala Pro Ala Leu
        35   40   45

Glu Thr Asp Ser Ser Pro Pro Pro Tyr Ser Ser Ile Thr Val Glu Val
    50   55   60

Pro Thr Thr Ser Asp Thr Glu Val Tyr Gly Glu Phe Tyr Pro Val Pro
65   70   75   80

Pro Pro Tyr Ser Val Ala Thr Ser Leu Pro Thr Tyr Asp Glu Ala Glu
                85   90   95

Lys Ala Lys Ala Ala Ala Met Ala Ala Ala Ala Glu Thr Ser Gln
            100   105   110

Arg Ile Gln Glu Glu Glu Cys Pro Pro Arg Asp Asp Phe Ser Asp Ala
        115   120   125

Asp Gln Leu Arg Val Gly Asn Asp Gly Ile Phe Met Leu Ala Phe Phe
    130   135   140

Met Ala Phe Ile Phe Asn Trp Leu Gly Phe Cys Leu Ser Phe Cys Ile

17

```
                145                    150                     155                        160

Thr Asn Thr Ile Ala Gly Arg Tyr Gly Ala Ile Cys Gly Phe Gly Leu
            165                  170                  175

Ser Leu Ile Lys Trp Ile Leu Ile Val Arg Phe Ser Asp Tyr Phe Thr
            180                  185                  190

Gly Tyr Phe Asn Gly Gln Tyr Trp Leu Trp Trp Ile Phe Leu Val Leu
        195                  200                  205

Gly Leu Leu Leu Phe Phe Arg Gly Phe Val Asn Tyr Leu Lys Val Arg
        210                  215                  220

Asn Met Ser Glu Ser Met Ala Ala Ala His Arg Thr Arg Tyr Phe Phe
225                  230                  235                  240

Leu Leu
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<210> 14
<211> 2324
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (13)..(738)

<400> 14

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gagccgggca gg atg gat cac cac cag ccg ggg act ggg cgc tac cag gtg 51
               Met Asp His His Gln Pro Gly Thr Gly Arg Tyr Gln Val
               1                 5                  10

ctt ctt aat gaa gag gat aac tca gaa tca tcg gct ata gag cag cca   99
Leu Leu Asn Glu Glu Asp Asn Ser Glu Ser Ser Ala Ile Glu Gln Pro
    15                  20                  25

cct act tca aac cca gca ccg cag att gtg cag gct gcg tct tca gca   147
Pro Thr Ser Asn Pro Ala Pro Gln Ile Val Gln Ala Ala Ser Ser Ala
 30                  35                  40                  45

cca gca ctt gaa act gac tct tcc cct cca cca tat agt agt att act   195
Pro Ala Leu Glu Thr Asp Ser Ser Pro Pro Pro Tyr Ser Ser Ile Thr
                50                  55                  60

gtg gaa gta cct aca act tca gat aca gaa gtt tac ggt gag ttt tat   243
Val Glu Val Pro Thr Thr Ser Asp Thr Glu Val Tyr Gly Glu Phe Tyr
            65                  70                  75

ccc gtg cca cct ccc tat agc gtt gct acc tct ctt cct aca tac gat   291
Pro Val Pro Pro Pro Tyr Ser Val Ala Thr Ser Leu Pro Thr Tyr Asp
        80                  85                  90

gaa gct gag aag gct aaa gct gct gca atg gca gct gca gca gca gaa   339
Glu Ala Glu Lys Ala Lys Ala Ala Ala Met Ala Ala Ala Ala Ala Glu
```

18

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            95                    100                    105

aca tct caa aga att cag gag gaa gag tgt cca cca aga gat gac ttc    387
Thr Ser Gln Arg Ile Gln Glu Glu Glu Cys Pro Pro Arg Asp Asp Phe
110                 115                 120                 125

agt gat gca gac cag ctc aga gtg ggg aat gat ggc att ttc atg ctg    435
Ser Asp Ala Asp Gln Leu Arg Val Gly Asn Asp Gly Ile Phe Met Leu
                130                 135                 140

gca ttt ttc atg gca ttt att ttc aac tgg ctt gga ttt tgt tta tcc    483
Ala Phe Phe Met Ala Phe Ile Phe Asn Trp Leu Gly Phe Cys Leu Ser
              145                 150                 155

ttc tgt atc acc aat acc ata gct gga agg tat ggt gct atc tgc gga    531
Phe Cys Ile Thr Asn Thr Ile Ala Gly Arg Tyr Gly Ala Ile Cys Gly
            160                 165                 170

ttt ggc ctt tcc ttg atc aaa tgg atc ctt att gtc agg ttt tct gat    579
Phe Gly Leu Ser Leu Ile Lys Trp Ile Leu Ile Val Arg Phe Ser Asp
          175                 180                 185

tat ttt act gga tat ttc aat gga cag tat tgg ctt tgg tgg ata ttt    627
Tyr Phe Thr Gly Tyr Phe Asn Gly Gln Tyr Trp Leu Trp Trp Ile Phe
190                 195                 200                 205

ctt gta ctt ggc ctg ctc ctt ttc ttc aga gga ttt gtt aat tat cta    675
Leu Val Leu Gly Leu Leu Leu Phe Phe Arg Gly Phe Val Asn Tyr Leu
                210                 215                 220

aaa gtc aga aac atg tct gaa agt atg gca gct gct cat aga aca agg    723
Lys Val Arg Asn Met Ser Glu Ser Met Ala Ala Ala His Arg Thr Arg
                225                 230                 235

tat ttc ttc tta ttg tagagactgc atcaacccga cattcctttc ttataccaat    778
Tyr Phe Phe Leu Leu
                240

gtgaaatttc cagatcatct gtaaacctac aactttaata gaagactact aataacagaa  838

gacaaattag tgaagaaaag acggagtttc gaaattgaat ggcagggtgg tttttgctta  898

caagccattt ctgttcattc tttaagtatc tatatttcat ttgttttgca catatgcata  958

tgtgcccatt taagatattt gcatatactt gatagaaacc ataaagttgt agcagttaag 1018

tccagtcaca tttggttaat cagtgtttga tataattgaa agagttgagt ggataaacag 1078

tcttccagct tgtaaatgcc attgacttct gacctgacat ttagtataat aaaaatgaaa 1138

ttcttaacca tgtcaaatga tttagtttct ggctcttaga ctcatctggc agttctacac 1198

atgaaacatc ttttgttata tagggtgtat tgaaacctgc agtgctgatt attagaaagg 1258

atttgtcaga ttttttgaaca tgatatttac attattattt aggaaaactc ttcctgtaaa 1318

taaccatgca taacttactt tctgcaatgt tttcttagaa attgtgtcca gatagctttc 1378
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19

actaattttta aattaagtga actaaatata tatgtgtata tgtatacaca tatatataca 1438

cacacacata tatatattta gaaacgtgag tgttaaagat agaatttgtt ttaggacaaa 1498

ttttaagaaa atgtgggaat accaaatgtc ctttataaga aaaataaatt ttattttaag 1558

ggacatacta gttttaggga ttttcagatg ggaagctgca tttttaggat tgcccatctt 1618

aagagatctt gcaggaagag attgtattag atattatatt tatttcattt aagataattt 1678

tcaaagttaa ttttctaaat aagataattc tcatttgtgt ttgtctttta aaaggccaat 1738

aaaatatctt tcagtatcat tgtaataatt ttttagagtt taatttgtaa agcttagcaa 1798

ataaaatctt gtactatgaa tagcttcttg ctttatgact ttaggattaa cttgtaaaaa 1858

acatatcctg aactgagata tgcaaaatac tcattttcaa gttatggaaa tgtgtttgtg 1918

gcatatagga ctgtggggtc tgtgtgtgta gtgagagtgt gtagccacta ttataactgg 1978

aatttaattt acattcataa actactatat ttcccatctt gcaaatcatt ttatgtctca 2038

tctgtttttc ctttcggtta tatctttggt tttgaatacc aacatttaaa atgatggtat 2098

tttatctttt aaacttaaaa attatttaat acagctatat ggaccttata aaattgattt 2158

cttatttatt attagacatt actactaaaa ggtacatcta actattcagg gacatttttc 2218

catttccaaa aaataaaatt tattatgctt tataacctct tctgtatttt ctaatttttt 2278

cattgtcttt gataaataaa acagttttgt tttgctaata tagcct 2324

<210> 15
<211> 242
<212> PRT
<213> Homo sapiens

<400> 15
Met Asp His His Gln Pro Gly Thr Gly Arg Tyr Gln Val Leu Leu Asn
  1   5   10   15

Glu Glu Asp Asn Ser Glu Ser Ser Ala Ile Glu Gln Pro Pro Thr Ser
                20   25   30

Asn Pro Ala Pro Gln Ile Val Gln Ala Val Ser Ser Ala Pro Ala Leu
            35   40   45

Glu Thr Asp Ser Ser Pro Pro Pro Tyr Ser Ser Ile Thr Val Glu Val
        50   55   60

Pro Thr Thr Ser Asp Thr Glu Val Tyr Gly Glu Phe Tyr Pro Val Pro
    65   70   75   80

Pro Pro Tyr Ser Val Ala Thr Ser Leu Pro Thr Tyr Asp Glu Ala Glu
                85   90   95

20

Lys Ala Lys Ala Ala Ala Met Ala Ala Ala Ala Ala Glu Thr Ser Gln
            100   105   110

Arg Ile Gln Glu Glu Glu Cys Pro Pro Arg Asp Asp Phe Ser Asp Ala
            115   120   125

Asp Gln Leu Arg Val Gly Asn Asp Gly Ile Phe Met Leu Ala Phe Phe
        130   135   140

Met Ala Phe Ile Phe Asn Trp Leu Gly Phe Cys Leu Ser Phe Cys Ile
145   150   155   160

Thr Asn Thr Ile Ala Gly Arg Tyr Gly Ala Ile Cys Gly Phe Gly Leu
                165   170   175

Ser Leu Ile Lys Trp Ile Leu Ile Val Arg Phe Ser Asp Tyr Phe Thr
            180   185   190

Gly Tyr Phe Asn Gly Gln Tyr Trp Leu Trp Trp Ile Phe Leu Val Leu
            195   200   205

Gly Leu Leu Leu Phe Phe Arg Gly Phe Val Asn Tyr Leu Lys Val Arg
    210   215   220

Asn Met Ser Glu Ser Met Ala Ala Ala His Arg Thr Arg Tyr Phe Phe
225   230   235   240

Leu Leu

<210> 16
<211> 2324
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (13)..(738)

<400> 16
gagccgggca gg atg gat cac cac cag ccg ggg act ggg cgc tac cag gtg   51
            Met Asp His His Gln Pro Gly Thr Gly Arg Tyr Gln Val
             1   5   10

ctt ctt aat gaa gag gat aac tca gaa tca tcg gct ata gag cag cca   99
Leu Leu Asn Glu Glu Asp Asn Ser Glu Ser Ser Ala Ile Glu Gln Pro
    15   20   25

cct act tca aac cca gca ccg cag att gtg cag gct gtg tct tca gca   147
Pro Thr Ser Asn Pro Ala Pro Gln Ile Val Gln Ala Val Ser Ser Ala
 30   35   40   45

cca gca ctt gaa act gac tct tcc cct cca cca tat agt agt att act   195
Pro Ala Leu Glu Thr Asp Ser Ser Pro Pro Pro Tyr Ser Ser Ile Thr
                50   55   60

21

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gtg gaa gta cct aca act tca gat aca gaa gtt tac ggt gag ttt tat    243
Val Glu Val Pro Thr Thr Ser Asp Thr Glu Val Tyr Gly Glu Phe Tyr
            65                  70                  75

ccc gtg cca cct ccc tat agc gtt gct acc tct ctt cct aca tac gat    291
Pro Val Pro Pro Pro Tyr Ser Val Ala Thr Ser Leu Pro Thr Tyr Asp
            80                  85                  90

gaa gct gag aag gct aaa gct gct gca atg gca gct gca gca gca gaa    339
Glu Ala Glu Lys Ala Lys Ala Ala Ala Met Ala Ala Ala Ala Ala Glu
        95                  100                 105

aca tct caa aga att cag gag gaa gag tgt cca cca aga gat gac ttc    387
Thr Ser Gln Arg Ile Gln Glu Glu Glu Cys Pro Pro Arg Asp Asp Phe
110                 115                 120                 125

agt gat gca gac cag ctc aga gtg ggg aat gat ggc att ttc atg ctg    435
Ser Asp Ala Asp Gln Leu Arg Val Gly Asn Asp Gly Ile Phe Met Leu
                130                 135                 140

gca ttt ttc atg gca ttt att ttc aac tgg ctt gga ttt tgt tta tcc    483
Ala Phe Phe Met Ala Phe Ile Phe Asn Trp Leu Gly Phe Cys Leu Ser
            145                 150                 155

ttc tgt atc acc aat acc ata gct gga agg tat ggt gct atc tgc gga    531
Phe Cys Ile Thr Asn Thr Ile Ala Gly Arg Tyr Gly Ala Ile Cys Gly
            160                 165                 170

ttt ggc ctt tcc ttg atc aaa tgg atc ctt att gtc agg ttt tct gat    579
Phe Gly Leu Ser Leu Ile Lys Trp Ile Leu Ile Val Arg Phe Ser Asp
            175                 180                 185

tat ttt act gga tat ttc aat gga cag tat tgg ctt tgg tgg ata ttt    627
Tyr Phe Thr Gly Tyr Phe Asn Gly Gln Tyr Trp Leu Trp Trp Ile Phe
190                 195                 200                 205

ctt gta ctt ggc ctg ctc ctt ttc ttc aga gga ttt gtt aat tat cta    675
Leu Val Leu Gly Leu Leu Leu Phe Phe Arg Gly Phe Val Asn Tyr Leu
                210                 215                 220

aaa gtc aga aac atg tct gaa agt atg gca gct gct cat aga aca agg    723
Lys Val Arg Asn Met Ser Glu Ser Met Ala Ala Ala His Arg Thr Arg
                225                 230                 235

tat ttc ttc tta ttg tagagactgc atcaacccga cattcctttc ttataccaat   778
Tyr Phe Phe Leu Leu
            240

gtgaaatttc cagatcatct gtaaacctac aactttaata gaagactact aataacagaa  838

gacaaattag tgaagaaaag acggagtttc gaaattgaat ggcagggtgg tttttgctta  898

caagccattt ctgttcattc tttaagtatc tatatttcat ttgtttttgca catatgcata  958

tgtgcccatt taagatattt gcatatactt gatagaaacc ataaagttgt agcagttaag 1018
```

22

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tccagtcaca tttggttaat cagtgtttga tataattgaa agagttgagt ggataaacag 1078

tcttccagct tgtaaatgcc attgacttct gacctgacat ttagtataat aaaaatgaaa 1138

ttcttaacca tgtcaaatga tttagtttct ggctcttaga ctcatctggc agttctacac 1198

atgaaacatc ttttgttata tagggtgtat tgaaacctgc agtgctgatt attagaaagg 1258

atttgtcaga ttttgaaca tgatatttac attattattt aggaaaactc ttcctgtaaa 1318

taaccatgca taacttactt tctgcaatgt tttcttagaa attgtgtcca gatagctttc 1378

actaatttta aattaagtga actaaatata tatgtgtata tgtatacaca tatatataca 1438

cacacacata tatatattta gaaacgtgag tgttaaagat agaatttgtt ttaggacaaa 1498

ttttaagaaa atgtgggaat accaaatgtc ctttataaga aaaataaatt ttattttaag 1558

ggacatacta gttttaggga ttttcagatg ggaagctgca tttttaggat tgcccatctt 1618

aagagatctt gcaggaagag attgtattag atattatatt tatttcattt aagataattt 1678

tcaaagttaa ttttctaaat aagataattc tcatttgtgt ttgtctttta aaaggccaat 1738

aaaatatctt tcagtatcat tgtaataatt ttttagagtt taatttgtaa agcttagcaa 1798

ataaaatctt gtactatgaa tagcttcttg ctttatgact ttaggattaa cttgtaaaaa 1858

acatatcctg aactgagata tgcaaaatac tcattttcaa gttatggaaa tgtgtttgtg 1918

gcatatagga ctgtggggtc tgtgtgtgta gtgagagtgt gtagccacta ttataactgg 1978

aatttaattt acattcataa actactatat ttcccatctt gcaaatcatt ttatgtctca 2038

tctgtttttc ctttcggtta tatctttggt tttgaatacc aacatttaaa atgatggtat 2098

tttatctttt aaacttaaaa attatttaat acagctatat ggaccttata aaattgattt 2158

cttatttatt attagacatt actactaaaa ggtacatcta actattcagg gacatttttc 2218

catttccaaa aaataaaatt tattatgctt tataacctct tctgtatttt ctaatttttt 2278

cattgtcttt gataaataaa acagtttgt tttgctaata tagcct              2324
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<210> 17
<211> 336
<212> PRT
<213> Homo sapiens

<400> 17
Met Ala Arg Arg Arg Ser Gln Arg Val Cys Ala Ser Gly Pro Ser Met
1   5   10   15

Leu Asn Ser Ala Arg Gly Ala Pro Glu Leu Leu Arg Gly Thr Ala Thr
                20   25   30

23

```
Asn Ala Glu Val Ser Ala Ala Ala Ala Gly Ala Thr Gly Ser Glu Glu
         35                      40                45

Leu Pro Pro Gly Asp Arg Gly Cys Arg Asn Gly Gly Gly Arg Gly Pro
         50                      55                60

Ala Ala Thr Thr Ser Ser Thr Gly Val Ala Val Gly Ala Glu His Gly
65                      70                75                80

Glu Asp Ser Leu Ser Arg Lys Pro Asp Pro Glu Pro Gly Arg Met Asp
                 85                90                      95

His His Gln Pro Gly Thr Gly Arg Tyr Gln Val Leu Leu Asn Glu Glu
             100                105                110

Asp Asn Ser Glu Ser Ser Ala Ile Glu Gln Pro Pro Thr Ser Asn Pro
         115                120                125

Ala Pro Gln Ile Val Gln Ala Val Ser Ser Ala Pro Ala Leu Glu Thr
     130                135                140

Asp Ser Ser Pro Pro Pro Tyr Ser Ser Ile Thr Val Glu Val Pro Thr
145                150                155                160

Thr Ser Asp Thr Glu Val Tyr Gly Glu Phe Tyr Pro Val Pro Pro Pro
             165                170                175

Tyr Ser Val Ala Thr Ser Leu Pro Thr Tyr Asp Glu Ala Glu Lys Ala
             180                185                190

Lys Ala Ala Ala Met Ala Ala Ala Ala Glu Thr Ser Gln Arg Ile
         195                200                205

Gln Glu Glu Glu Cys Pro Pro Arg Asp Asp Phe Ser Asp Ala Asp Gln
     210                215                220

Leu Arg Val Gly Asn Asp Gly Ile Phe Met Leu Ala Phe Phe Met Ala
225                230                235                240

Phe Ile Phe Asn Trp Leu Gly Phe Cys Leu Ser Phe Cys Ile Thr Asn
             245                250                255

Thr Ile Ala Gly Arg Tyr Gly Ala Ile Cys Gly Phe Gly Leu Ser Leu
             260                265                270

Ile Lys Trp Ile Leu Ile Val Arg Phe Ser Asp Tyr Phe Thr Gly Tyr
             275                280                285

Phe Asn Gly Gln Tyr Trp Leu Trp Trp Ile Phe Leu Val Leu Gly Leu
     290                295                300

Leu Leu Phe Phe Arg Gly Phe Val Asn Tyr Leu Lys Val Arg Asn Met
305                310                315                320

Ser Glu Ser Met Ala Ala Ala His Arg Thr Arg Tyr Phe Phe Leu Leu
             325                330                335
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24

<210> 18
<211> 2636
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (53)..(1060)

<400> 18
cttactttc catctcctcc cacccagcta taccctccca ctggcggcgc gg atg gca 58
                                                          Met Ala
                                                            1

cgc cgg cgg agc cag cga gtc tgc gcg agc ggt ccg agc atg ctc aat   106
Arg Arg Arg Ser Gln Arg Val Cys Ala Ser Gly Pro Ser Met Leu Asn
          5   10   15

agc gcg cgc ggc gcc ccg gag ctt ctc cgc gga acc gcg acc aac gcg   154
Ser Ala Arg Gly Ala Pro Glu Leu Leu Arg Gly Thr Ala Thr Asn Ala
         20   25   30

gag gtc tcg gcg gcc gct gcg gga gcc aca gga agt gaa gag ctt ccg   202
Glu Val Ser Ala Ala Ala Ala Gly Ala Thr Gly Ser Glu Glu Leu Pro
 35   40   45   50

ccg gga gac cgc ggc tgc agg aac gga ggc gga agg ggc cct gcg gcg   250
Pro Gly Asp Arg Gly Cys Arg Asn Gly Gly Gly Arg Gly Pro Ala Ala
                 55   60   65

acg acg tcg tcg acg ggg gtg gcc gtg gga gct gag cac gga gaa gac   298
Thr Thr Ser Ser Thr Gly Val Ala Val Gly Ala Glu His Gly Glu Asp
                 70   75   80

tcc ctc tct cgg aag ccg gat ccc gag ccg ggc agg atg gat cac cac   346
Ser Leu Ser Arg Lys Pro Asp Pro Glu Pro Gly Arg Met Asp His His
             85   90   95

cag ccg ggg act ggg cgc tac cag gtg ctt ctt aat gaa gag gat aac   394
Gln Pro Gly Thr Gly Arg Tyr Gln Val Leu Leu Asn Glu Glu Asp Asn
        100   105   110

tca gaa tca tcg gct ata gag cag cca cct act tca aac cca gca ccg   442
Ser Glu Ser Ser Ala Ile Glu Gln Pro Pro Thr Ser Asn Pro Ala Pro
115   120   125   130

cag att gtg cag gct gtg tct tca gca cca gca ctt gaa act gac tct   490
Gln Ile Val Gln Ala Val Ser Ser Ala Pro Ala Leu Glu Thr Asp Ser
                135   140   145

tcc cct cca cca tat agt agt att act gtg gaa gta cct aca act tca   538
Ser Pro Pro Pro Tyr Ser Ser Ile Thr Val Glu Val Pro Thr Thr Ser
                150   155   160

gat aca gaa gtt tac ggt gag ttt tat ccc gtg cca cct ccc tat agc   586
Asp Thr Glu Val Tyr Gly Glu Phe Tyr Pro Val Pro Pro Pro Tyr Ser

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              165                    170                    175
gtt gct acc tct ctt cct aca tac gat gaa gct gag aag gct aaa gct    634
Val Ala Thr Ser Leu Pro Thr Tyr Asp Glu Ala Glu Lys Ala Lys Ala
     180                    185                    190

gct gca atg gca gct gca gca gca gaa aca tct caa aga att cag gag    682
Ala Ala Met Ala Ala Ala Ala Ala Glu Thr Ser Gln Arg Ile Gln Glu
195                    200                    205                    210

gaa gag tgt cca cca aga gat gac ttc agt gat gca gac cag ctc aga    730
Glu Glu Cys Pro Pro Arg Asp Asp Phe Ser Asp Ala Asp Gln Leu Arg
               215                    220                    225

gtg ggg aat gat ggc att ttc atg ctg gca ttt ttc atg gca ttt att    778
Val Gly Asn Asp Gly Ile Phe Met Leu Ala Phe Phe Met Ala Phe Ile
               230                    235                    240

ttc aac tgg ctt gga ttt tgt tta tcc ttc tgt atc acc aat acc ata    826
Phe Asn Trp Leu Gly Phe Cys Leu Ser Phe Cys Ile Thr Asn Thr Ile
               245                    250                    255

gct gga agg tat ggt gct atc tgc gga ttt ggc ctt tcc ttg atc aaa    874
Ala Gly Arg Tyr Gly Ala Ile Cys Gly Phe Gly Leu Ser Leu Ile Lys
     260                    265                    270

tgg atc ctt att gtc agg ttt tct gat tat ttt act gga tat ttc aat    922
Trp Ile Leu Ile Val Arg Phe Ser Asp Tyr Phe Thr Gly Tyr Phe Asn
275                    280                    285                    290

gga cag tat tgg ctt tgg tgg ata ttt ctt gta ctt ggc ctg ctc ctt    970
Gly Gln Tyr Trp Leu Trp Trp Ile Phe Leu Val Leu Gly Leu Leu Leu
               295                    300                    305

ttc ttc aga gga ttt gtt aat tat cta aaa gtc aga aac atg tct gaa   1018
Phe Phe Arg Gly Phe Val Asn Tyr Leu Lys Val Arg Asn Met Ser Glu
               310                    315                    320

agt atg gca gct gct cat aga aca agg tat ttc ttc tta ttg            1060
Ser Met Ala Ala Ala His Arg Thr Arg Tyr Phe Phe Leu Leu
               325                    330                    335

tagagactgc atcaacccga cattcctttc ttataccaat gtgaaatttc cagatcatct  1120

gtaaacctac aactttaata gaagactact aataacagaa gacaaattag tgaagaaaag  1180

acggagtttc gaaattgaat ggcagggtgg tttttgctta caagccattt ctgttcattc  1240

tttaagtatc tatatttcat ttgttttgca catatgcata tgtgcccatt taagatattt  1300

gcatatactt gatagaaacc ataaagttgt agcagttaag tccagtcaca tttggttaat  1360

cagtgtttga tataattgaa agagttgagt ggataaacag tcttccagct tgtaaatgcc  1420

attgacttct gacctgacat ttagtataat aaaaatgaaa ttcttaacca tgtcaaatga  1480

tttagtttct ggctcttaga ctcatctggc agttctacac atgaaacatc ttttgttata  1540
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26

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taaggtgtat tgaaacctgc agtgctgatt attagaaagg atttgtcaga ttttttgaaca 1600

tgatatttac attattattt aggaaaactc ttcctgtaaa taaccatgca taacttactt 1660

tctgcaatgt tttcttagaa attgtgtcca gatagctttc actaatttta aattaagtga 1720

actaaatata tatgtgtata tgtatacaca tatatataca cacacacata tatatattta 1780

gaaacgtgag tgttaaagat agaatttgtt ttaggacaaa ttttaagaaa atgtgggaat 1840

accaaatgtc ctttataaga aaaataaatt ttgttttaag ggacatacca gttttaggga 1900

ttttcagatg ggaagctgca ttttttaggat tgcccatctt aagagatctt gcaggaagag 1960

attgtattag atattatatt tatttcattt aagataattt tcaaagttaa ttttctaaat 2020

aagataattc tcatttgtgt ttgtctttta aaaggccaat aaaatatctt tcagtatcat 2080

tgtaataatt ttttagagtt taatttgtaa agcttagcaa ataaaatctt gtactatgaa 2140

tagcttcttg ctttatgact ttaggattaa cttgtaaaaa acatatcctg aactgagata 2200

tgcaaaatac tcattttcaa gttatggaaa tgtgtttgtg gcatatagga ctgtggggtc 2260

tgtgtgtgta gtgagagtgt gtagccacta ttataactgg aatttaattt acattcataa 2320

actactatat ttcccatctt gcaaatcatt ttatgtctca tctgttttc ctttcggtta 2380

tatctttggt tttgaatacc aacatttaaa atgatggtat tttatctttt aaacttaaaa 2440

attatttaat acagctatat ggaccttata aaattgattt cttatttatt attagacatt 2500

actactaaaa ggtacatcta actattcagg gacattttc catttccaaa aaataaaatt 2560

tattatgctt tataacctct tctgtatttt ctaattttt cattgtcttt gataaataaa 2620

acagttttgt tttgct                                              2636
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<210> 19
<211> 336
<212> PRT
<213> Homo sapiens

<400> 19
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Met Ala Arg Arg Arg Ser Gln Arg Val Cys Ala Ser Gly Pro Ser Met
 1               5                   10                  15

Leu Asn Ser Ala Arg Gly Ala Pro Glu Leu Leu Arg Gly Thr Ala Thr
            20                  25                  30

Asn Ala Glu Val Ser Ala Ala Ala Ala Gly Ala Thr Gly Ser Glu Glu
        35                  40                  45

Leu Pro Pro Gly Asp Arg Gly Cys Arg Asn Gly Gly Gly Arg Gly Pro
    50                  55                  60
```

27

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Ala Ala Thr Thr Ser Ser Thr Gly Val Ala Val Gly Ala Glu His Gly
65              70              75              80

Glu Asp Ser Leu Ser Arg Lys Pro Asp Pro Glu Pro Gly Arg Met Asp
                85              90              95

His His Gln Pro Gly Thr Gly Arg Tyr Gln Val Leu Leu Asn Glu Glu
            100             105             110

Asp Asn Ser Glu Ser Ser Ala Ile Glu Gln Pro Pro Thr Ser Asn Pro
            115             120             125

Ala Pro Gln Ile Val Gln Ala Ala Ser Ser Ala Pro Ala Leu Glu Thr
        130             135             140

Asp Ser Ser Pro Pro Pro Tyr Ser Ser Ile Thr Val Glu Val Pro Thr
145             150             155             160

Thr Ser Asp Thr Glu Val Tyr Gly Glu Phe Tyr Pro Val Pro Pro Pro
                165             170             175

Tyr Ser Val Ala Thr Ser Leu Pro Thr Tyr Asp Glu Ala Glu Lys Ala
            180             185             190

Lys Ala Ala Ala Met Ala Ala Ala Ala Glu Thr Ser Gln Arg Ile
        195             200             205

Gln Glu Glu Glu Cys Pro Pro Arg Asp Asp Phe Ser Asp Ala Asp Gln
    210             215             220

Leu Arg Val Gly Asn Asp Gly Ile Phe Met Leu Ala Phe Phe Met Ala
225             230             235             240

Phe Ile Phe Asn Trp Leu Gly Phe Cys Leu Ser Phe Cys Ile Thr Asn
            245             250             255

Thr Ile Ala Gly Arg Tyr Gly Ala Ile Cys Gly Phe Gly Leu Ser Leu
        260             265             270

Ile Lys Trp Ile Leu Ile Val Arg Phe Ser Asp Tyr Phe Thr Gly Tyr
        275             280             285

Phe Asn Gly Gln Tyr Trp Leu Trp Trp Ile Phe Leu Val Leu Gly Leu
    290             295             300

Leu Leu Phe Phe Arg Gly Phe Val Asn Tyr Leu Lys Val Arg Asn Met
305             310             315             320

Ser Glu Ser Met Ala Ala Ala His Arg Thr Arg Tyr Phe Phe Leu Leu
            325             330             335
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<210> 20
<211> 2636
<212> DNA
<213> Homo sapiens

28

<220>
<221> CDS
<222> (53)..(1060)

<400> 20
cttactttc catctcctcc cacccagcta taccctccca ctggcggcgc gg atg gca 58
                                                           Met Ala
                                                            1

cgc cgg cgg agc cag cga gtc tgc gcg agc ggt ccg agc atg ctc aat 106
Arg Arg Arg Ser Gln Arg Val Cys Ala Ser Gly Pro Ser Met Leu Asn
      5   10   15

agc gcg cgc ggc gcc ccg gag ctt ctc cgc gga acc gcg acc aac gcg 154
Ser Ala Arg Gly Ala Pro Glu Leu Leu Arg Gly Thr Ala Thr Asn Ala
   20   25   30

gag gtc tcg gcg gcc gct gcg gga gcc aca gga agt gaa gag ctt ccg 202
Glu Val Ser Ala Ala Ala Ala Gly Ala Thr Gly Ser Glu Glu Leu Pro
 35   40   45   50

ccg gga gac cgc ggc tgc agg aac gga ggc gga agg ggc cct gcg gcg 250
Pro Gly Asp Arg Gly Cys Arg Asn Gly Gly Gly Arg Gly Pro Ala Ala
            55   60   65

acg acg tcg tcg acg ggg gtg gcc gtg gga gct gag cac gga gaa gac 298
Thr Thr Ser Ser Thr Gly Val Ala Val Gly Ala Glu His Gly Glu Asp
          70   75   80

tcc ctc tct cgg aag ccg gat ccc gag ccg ggc agg atg gat cac cac 346
Ser Leu Ser Arg Lys Pro Asp Pro Glu Pro Gly Arg Met Asp His His
        85   90   95

cag ccg ggg act ggg cgc tac cag gtg ctt ctt aat gaa gag gat aac 394
Gln Pro Gly Thr Gly Arg Tyr Gln Val Leu Leu Asn Glu Glu Asp Asn
   100   105   110

tca gaa tca tcg gct ata gag cag cca cct act tca aac cca gca ccg 442
Ser Glu Ser Ser Ala Ile Glu Gln Pro Pro Thr Ser Asn Pro Ala Pro
115   120   125   130

cag att gtg cag gct gcg tct tca gca cca gca ctt gaa act gac tct 490
Gln Ile Val Gln Ala Ala Ser Ser Ala Pro Ala Leu Glu Thr Asp Ser
          135   140   145

tcc cct cca cca tat agt agt att act gtg gaa gta cct aca act tca 538
Ser Pro Pro Pro Tyr Ser Ser Ile Thr Val Glu Val Pro Thr Thr Ser
          150   155   160

gat aca gaa gtt tac ggt gag ttt tat ccc gtg cca cct ccc tat agc 586
Asp Thr Glu Val Tyr Gly Glu Phe Tyr Pro Val Pro Pro Pro Tyr Ser
          165   170   175

gtt gct acc tct ctt cct aca tac gat gaa gct gag aag gct aaa gct 634
Val Ala Thr Ser Leu Pro Thr Tyr Asp Glu Ala Glu Lys Ala Lys Ala
   180   185   190

29

```
gct gca atg gca gct gca gca gca gaa aca tct caa aga att cag gag    682
Ala Ala Met Ala Ala Ala Ala Ala Glu Thr Ser Gln Arg Ile Gln Glu
195             200             205             210

gaa gag tgt cca cca aga gat gac ttc agt gat gca gac cag ctc aga    730
Glu Glu Cys Pro Pro Arg Asp Asp Phe Ser Asp Ala Asp Gln Leu Arg
                215             220             225

gtg ggg aat gat ggc att ttc atg ctg gca ttt ttc atg gca ttt att    778
Val Gly Asn Asp Gly Ile Phe Met Leu Ala Phe Phe Met Ala Phe Ile
                230             235             240

ttc aac tgg ctt gga ttt tgt tta tcc ttc tgt atc acc aat acc ata    826
Phe Asn Trp Leu Gly Phe Cys Leu Ser Phe Cys Ile Thr Asn Thr Ile
                245             250             255

gct gga agg tat ggt gct atc tgc gga ttt ggc ctt tcc ttg atc aaa    874
Ala Gly Arg Tyr Gly Ala Ile Cys Gly Phe Gly Leu Ser Leu Ile Lys
                260             265             270

tgg atc ctt att gtc agg ttt tct gat tat ttt act gga tat ttc aat    922
Trp Ile Leu Ile Val Arg Phe Ser Asp Tyr Phe Thr Gly Tyr Phe Asn
275             280             285             290

gga cag tat tgg ctt tgg tgg ata ttt ctt gta ctt ggc ctg ctc ctt    970
Gly Gln Tyr Trp Leu Trp Trp Ile Phe Leu Val Leu Gly Leu Leu Leu
                295             300             305

ttc ttc aga gga ttt gtt aat tat cta aaa gtc aga aac atg tct gaa   1018
Phe Phe Arg Gly Phe Val Asn Tyr Leu Lys Val Arg Asn Met Ser Glu
                310             315             320

agt atg gca gct gct cat aga aca agg tat ttc ttc tta ttg            1060
Ser Met Ala Ala Ala His Arg Thr Arg Tyr Phe Phe Leu Leu
                325             330             335

tagagactgc atcaacccga cattccttc ttataccaat gtgaaatttc cagatcatct   1120

gtaaacctac aactttaata gaagactact aataacagaa gacaaattag tgaagaaaag   1180

acggagtttc gaaattgaat ggcagggtgg tttttgctta caagccattt ctgttcattc   1240

tttaagtatc tatatttcat ttgttttgca catatgcata tgtgcccatt taagatattt   1300

gcatatactt gatagaaacc ataaagttgt agcagttaag tccagtcaca tttggttaat   1360

cagtgtttga tataattgaa agagttgagt ggataaacag tcttccagct tgtaaatgcc   1420

attgacttct gacctgacat ttagtataat aaaaatgaaa ttcttaacca tgtcaaatga   1480

tttagtttct ggctcttaga ctcatctggc agttctacac atgaaacatc ttttgttata   1540

taaggtgtat tgaaacctgc agtgctgatt attagaaagg atttgtcaga tttttgaaca   1600

tgatatttac attattattt aggaaaactc ttcctgtaaa taaccatgca taacttactt   1660
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30

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tctgcaatgt tttcttagaa attgtgtcca gatagctttc actaatttta aattaagtga 1720

actaaatata tatgtgtata tgtatacaca tatatataca cacacacata tatatattta 1780

gaaacgtgag tgttaaagat agaatttgtt ttaggacaaa ttttaagaaa atgtgggaat 1840

accaaatgtc ctttataaga aaaataaatt ttgttttaag ggacatacca gttttaggga 1900

ttttcagatg ggaagctgca tttttaggat tgcccatctt aagagatctt gcaggaagag 1960

attgtattag atattatatt tatttcattt aagataattt tcaaagttaa ttttctaaat 2020

aagataattc tcatttgtgt ttgtctttta aaaggccaat aaaatatctt tcagtatcat 2080

tgtaataatt ttttagagtt taatttgtaa agcttagcaa ataaaatctt gtactatgaa 2140

tagcttcttg ctttatgact ttaggattaa cttgtaaaaa acatatcctg aactgagata 2200

tgcaaaatac tcattttcaa gttatggaaa tgtgtttgtg gcatatagga ctgtggggtc 2260

tgtgtgtgta gtgagagtgt gtagccacta ttataactgg aatttaattt acattcataa 2320

actactatat ttcccatctt gcaaatcatt ttatgtctca tctgtttttc ctttcggtta 2380

tatctttggt tttgaatacc aacatttaaa atgatggtat tttatctttt aaacttaaaa 2440

attatttaat acagctatat ggaccttata aaattgattt cttatttatt attagacatt 2500

actactaaaa ggtacatcta actattcagg gacattttc catttccaaa aaataaaatt 2560

tattatgctt tataacctct tctgtatttt ctaattttt cattgtcttt gataaataaa 2620

acagttttgt tttgct                                               2636
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<210> 21
<211> 76
<212> PRT
<213> Homo sapiens

<400> 21
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Met Val Cys Ile Pro Cys Ile Val Ile Pro Val Leu Leu Trp Ile Tyr
  1               5                  10                  15

Lys Lys Phe Leu Glu Pro Tyr Ile Tyr Pro Leu Val Ser Pro Phe Val
             20                  25                  30

Ser Arg Ile Trp Pro Lys Lys Ala Ile Gln Glu Ser Asn Asp Thr Asn
             35                  40                  45

Lys Gly Lys Val Asn Phe Lys Gly Ala Asp Met Asn Gly Leu Pro Thr
     50                  55                  60

Lys Gly Pro Thr Glu Ile Cys Asp Lys Lys Lys Asp
 65                  70                  75
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31

<210> 22
<211> 1085
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (176)..(403)

<400> 22
gggctagcgg cctgggttgg gctttgtagc tgctccgcag gcccagcccg ggccgcgctc 60

gcagagtcct aggcggtgcg cggcctcctg cctcctccct cctcggcggt cgcggcccgc 120

cggcctccgc ggtgcctgcc ttcgctctca ggttgaggag ctcaagcttg ggaaa atg 178
                                                               Met
                                                               1

gtg tgc att cct tgt atc gtc att cca gtt ctg ctc tgg atc tac aaa 226
Val Cys Ile Pro Cys Ile Val Ile Pro Val Leu Leu Trp Ile Tyr Lys
              5   10   15

aaa ttc ctg gag cca tat ata tac cct ctg gtt tcc ccc ttc gtt agt 274
Lys Phe Leu Glu Pro Tyr Ile Tyr Pro Leu Val Ser Pro Phe Val Ser
          20   25   30

cgt ata tgg cct aag aaa gca ata caa gaa tcc aat gat aca aac aaa 322
Arg Ile Trp Pro Lys Lys Ala Ile Gln Glu Ser Asn Asp Thr Asn Lys
      35   40   45

ggc aaa gta aac ttt aag ggt gca gac atg aat gga tta cca aca aaa 370
Gly Lys Val Asn Phe Lys Gly Ala Asp Met Asn Gly Leu Pro Thr Lys
  50   55   60   65

gga cca aca gaa atc tgt gat aaa aag aaa gac taaagaaatt ttcctaaagg 423
Gly Pro Thr Glu Ile Cys Asp Lys Lys Lys Asp
              70   75

accccatcat ttaaaaaatg gacctgataa tatgaagcat cttccttgta attgtctctg 483

acctttttat ctgagaccgg aattcaggat aggagtctag atatttacct gatactaatc 543

aggaaatata tgatatccgt atttaaaatg tagttagtta tatttaatga cctcattcct 603

aagttccttt ttcgttaatg tagctttcat ttctgttatt gctgtttgaa taatatgatt 663

aaatagaagg tttgtgccag tagacattat gttactaaat cagcacttta aaatctttgg 723

ttctctaatt catatgaatt tgctgtttgc tctaatttct ttgggctctt ctaatttgag 783

tggagtacaa ttttgttgtg aaacagtcca gtgaaactgt gcaggaaat gaaggtagaa 843

ttttgggagg taataatgat gtgaaacata aagatttaat aattactgtc caacacagtg 903

gagcagcttg tccacaaata tagtaattac tatttattgc tctaaggaag attaaaaaaa 963

gatagggaaa aggggggaaac ttctttgaaa aatgaaacat ctgttacatt aatgtctaat 1023

32

tataaaattt taatccttac tgcatttctt ctgttcctac aaatgtatta aacattcagt 1083

tt   1085

<210> 23
<211> 84
<212> PRT
<213> Homo sapiens

<400> 23
Met Ala Ile Lys Phe Leu Glu Val Ile Lys Pro Phe Cys Val Ile Leu
 1   5   10   15

Pro Glu Ile Gln Lys Pro Glu Arg Lys Ile Gln Phe Lys Glu Lys Val
            20   25   30

Leu Trp Thr Ala Ile Thr Leu Phe Ile Phe Leu Val Cys Cys Gln Ile
        35   40   45

Pro Leu Phe Gly Ile Met Ser Ser Asp Ser Ala Asp Pro Phe Tyr Trp
    50   55   60

Met Arg Val Ile Leu Ala Ser Asn Arg Gly Thr Leu Met Glu His Ser
65   70   75   80

Leu Ser Gly Leu

<210> 24
<211> 1593
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (65)..(316)

<400> 24
agcgtcgcct cacgcggagc agagctgagc tgaagcggga cccggagccc gagcagccgc 60

cgcc atg gca atc aaa ttt ctg gaa gtc atc aag ccc ttc tgt gtc atc 109
     Met Ala Ile Lys Phe Leu Glu Val Ile Lys Pro Phe Cys Val Ile
      1   5   10   15

ctg ccg gaa att cag aag cca gag agg aag att cag ttt aag gag aaa 157
Leu Pro Glu Ile Gln Lys Pro Glu Arg Lys Ile Gln Phe Lys Glu Lys
            20   25   30

gtg ctg tgg acc gct atc acc ctc ttt atc ttc tta gtg tgc tgc cag 205
Val Leu Trp Thr Ala Ile Thr Leu Phe Ile Phe Leu Val Cys Cys Gln
        35   40   45

att ccc ctg ttt ggg atc atg tct tca gat tca gct gac cct ttc tat 253
Ile Pro Leu Phe Gly Ile Met Ser Ser Asp Ser Ala Asp Pro Phe Tyr

33

```
              50                    55                    60
tgg atg aga gtg att cta gcc tct aac aga ggc aca ttg atg gag cac   301
Trp Met Arg Val Ile Leu Ala Ser Asn Arg Gly Thr Leu Met Glu His
     65                    70                    75

tct ctc tct ggc ctt tagggagtcc cctcttagga caggcactgc ccagcagcaa   356
Ser Leu Ser Gly Leu
 80

gggcagcaga gttgggtgct aagatcctga ggagctcgag gtttcgagct ggctttagac   416

attggtggga ccaaggatgt tttgcaggat gccctgatcc taagaagggg gcctgggggt   476

gcgtgcagcc tgtcggggag accccactct gtgcacctat tggctcttct agctgactct   536

tctcgttggg cttagagtct gcctgtttct gctagctccg tgtttagtcc acttgggtca   596

tcagctctgc caagctgagc ctggccaagc taggtggaca gacccttgca gtgatgtccg   656

tttgtccaga ttctgccagt catcactgga cacgtctcct cgcagctgcc ctagcaaggg   716

gagacattgt ggtagctatc agacatggac agaaactgac ttagtgctca caagcccta   776

caccttctgg gctgaagatc acccagctgt gttcagaatt ttcttactgt gcttaggact   836

gcacgcaagt gagcagacac caccgacttc ctttctgcgt caccagtgtc gtcagcagag   896

agaggacagc acaggctcaa ggttggtagt gaagtcaggt tcggggtgca tgggctgtgg   956

tggtggtgat cagttgctcc agtgtttgaa ataagaagac tcatgtttat gtctggaata   1016

agttctgttt gtgctgacag gtgaccttgc tggcagtgct agccaggaaa cagagtgacc   1076

aagggacaag aagggacttg cctaaagcca cccagcaact cagcagcaga accaagatgg   1136

gccccaggct cctccatatg gcccagggct taccaccctca tcacacgtgg ccttgtctag   1196

acccagtcct gagcagggga gaggctcttg agacctgatg ccctcctacc cacatggttc   1256

tcccactgcc ctgtctgctc tgctgctaca gaggggcagg gcctccccca gcccacgctt   1316

aggaatgctt ggcctctggc aggcaggcag ctgtacccaa gctggtgggc aggggctgg   1376

aaggcaccag gcctcaggag gagccccata gtcccgcctg cagcctgtaa ccatcggctg   1436

ggccctgcaa ggcccacact cacgccctgt gggtgatggt cacggtgggt gggtgggggc   1496

tgaccccagc ttccagggga ctgtcactgt ggacgccaaa atggcataac tgagataagg   1556

tgaataagtg acaaataaag ccagttttt acaaggt                            1593
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<210> 25
<211> 179
<212> PRT
<213> Homo sapiens

34

<400> 25

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Met Ala Ile Lys Phe Leu Glu Val Ile Lys Pro Phe Cys Val Ile Leu
 1               5                  10                      15

Pro Glu Ile Gln Lys Pro Glu Arg Lys Ile Gln Phe Lys Glu Lys Val
                20                  25                  30

Leu Trp Thr Ala Ile Thr Leu Phe Ile Phe Leu Val Cys Cys Gln Ile
            35                  40                  45

Pro Leu Phe Gly Ile Met Ser Ser Asp Ser Ala Asp Pro Val His Ala
        50                  55                  60

Val Val Tyr Ile Val Phe Met Leu Gly Ser Cys Ala Phe Phe Ser Lys
65                  70                  75                      80

Thr Trp Ile Glu Val Ser Gly Ser Ser Ala Lys Asp Val Ala Lys Gln
                85                  90                  95

Leu Lys Glu Gln Gln Met Val Met Arg Gly His Arg Glu Thr Ser Met
                100                 105                 110

Val His Glu Leu Asn Arg Tyr Ile Pro Thr Ala Ala Ala Phe Gly Gly
            115                 120                 125

Leu Cys Ile Gly Ala Leu Ser Val Leu Ala Asp Phe Leu Gly Ala Ile
        130                 135                 140

Gly Ser Gly Thr Gly Ile Leu Leu Ala Val Thr Ile Ile Tyr Gln Tyr
145                 150                 155                 160

Phe Glu Ile Phe Val Lys Glu Gln Ser Glu Val Gly Ser Met Gly Ala
                165                 170                 175

Leu Leu Phe
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<210> 26
<211> 1820
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (114)..(650)

<400> 26

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acgcggagca gagctgagct gaagcgggac ccggagcccg agcagccgcc gcc atg      116
                                                          Met
                                                           1

gca atc aaa ttt ctg gaa gtc atc aag ccc ttc tgt gtc atc ctg ccg   164
Ala Ile Lys Phe Leu Glu Val Ile Lys Pro Phe Cys Val Ile Leu Pro
```

35

```
                         5                        10                       15
gaa att cag aag cca gag agg aag att cag ttt aag gag aaa gtg ctg   212
Glu Ile Gln Lys Pro Glu Arg Lys Ile Gln Phe Lys Glu Lys Val Leu
        20                      25                      30

tgg acc gct atc acc ctc ttt atc ttc tta gtg tgc tgc cag att ccc   260
Trp Thr Ala Ile Thr Leu Phe Ile Phe Leu Val Cys Cys Gln Ile Pro
        35                      40                      45

ctg ttt ggg atc atg tct tca gat tca gct gac ccg gtc cat gca gtt   308
Leu Phe Gly Ile Met Ser Ser Asp Ser Ala Asp Pro Val His Ala Val
 50                      55                      60                      65

gta tac ata gtg ttc atg ctg ggc tcc tgt gca ttc ttc tcc aaa acg   356
Val Tyr Ile Val Phe Met Leu Gly Ser Cys Ala Phe Phe Ser Lys Thr
                70                      75                      80

tgg att gag gtc tca ggt tcc tct gcc aaa gat gtt gca aag cag ctg   404
Trp Ile Glu Val Ser Gly Ser Ser Ala Lys Asp Val Ala Lys Gln Leu
                85                      90                      95

aag gag cag cag atg gtg atg aga ggc cac cga gag acc tcc atg gtc   452
Lys Glu Gln Gln Met Val Met Arg Gly His Arg Glu Thr Ser Met Val
            100                     105                     110

cat gaa ctc aac cgg tac atc ccc aca gcc gcg gcc ttt ggt ggg ctg   500
His Glu Leu Asn Arg Tyr Ile Pro Thr Ala Ala Ala Phe Gly Gly Leu
        115                     120                     125

tgc atc ggg gcc ctc tcg gtc ctg gct gac ttc cta ggc gcc att ggg   548
Cys Ile Gly Ala Leu Ser Val Leu Ala Asp Phe Leu Gly Ala Ile Gly
130                     135                     140                     145

tct gga acc ggg atc ctg ctc gca gtc aca atc atc tac cag tac ttt   596
Ser Gly Thr Gly Ile Leu Leu Ala Val Thr Ile Ile Tyr Gln Tyr Phe
                150                     155                     160

gag atc ttc gtt aag gag caa agc gag gtt ggc agc atg ggg gcc ctg   644
Glu Ile Phe Val Lys Glu Gln Ser Glu Val Gly Ser Met Gly Ala Leu
                165                     170                     175

ctc ttc tgagcccgtc tcccggacag gttgaggaag ctgctccaga agcgcctcgg   700
Leu Phe

aaggggagct ctcatcatgg cgcgtgctgc tgcggcatat ggacttttaa taatgttttt 760

gaatttcgta ttctttcatt ccactgtgta aagtgctaga cattttccaa tttaaaattt 820

tgctttttat cctggcactg gcaaaaagaa ctgtgaaagt gaatttattc agccgactgc 880

cagagaagtg ggaatggtat aggattgtcc ccaagtgtcc atgtaacttt tgttttaacc 940

tttgcacctt ctcagtgctg tatgcggctg cagccgtctc acctgtttcc ccacaaaggg 1000

aatttctcac tctggttgga agcacaaaca ctgaaatgtc tacgtttcat tttggcagta 1060
```

36

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gggtgtgaag ctgggagcag atcatgtatt tcccggagac atgggacctt gctggcatgt 1120

ctccttcaca atcaggcgtg ggaatatctg gcttaggact gtttctctct aagacaccat 1180

tgttttccct tattttaaaa gtgatttttt taaggacaga acttcttcca aaagagaggg 1240

atggctttcc cagaagacac tctggagacc ttgctggcag tgctagccag gaaacagagt 1300

gaccaaggga caagaaggga cttgcctaaa gccacccagc aactcagcag cagaaccaag 1360

atgggcccca ggctcctcca tatggcccag ggcttaccac cctatcacac gtggccttgt 1420

ctagacccag tcctgagcag gggagaggct cttgagacct gatgccctcc tacccacatg 1480

gttctcccac tgccctgtct gctctgctgc tacaraggggg cagggcctcc cccagcccac 1540

gcttaggaat gcttggcctc tggcaggcag gcagctgtac ccaagctggt gggcaggggg 1600

ctggaaggca ccaggcctca ggaggagccc catagtcccg cctgcagcct gtaaccatcg 1660

gctgggccct gcaaggccca cactcacgcc ctgtgggtga tggtcacggt gggtgggtgg 1720

gggctgaccc cagcttccag gggactgtca ctgtggacgc caaaatggca taactsasat 1780

aaggtgaata agtgacaaat aaagccagtt ttttacaagg                        1820
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<210> 27
<211> 279
<212> PRT
<213> Homo sapiens

<400> 27

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Met Glu Ala Val Val Asn Leu Tyr Gln Glu Val Met Lys His Ala Asp
 1               5                  10                  15

Pro Arg Ile Gln Gly Tyr Pro Leu Met Gly Ser Pro Leu Leu Met Thr
             20                  25                  30

Ser Ile Leu Leu Thr Tyr Val Tyr Phe Val Leu Ser Leu Gly Pro Arg
         35                  40                  45

Ile Met Ala Asn Arg Lys Pro Phe Gln Leu Arg Gly Phe Met Ile Val
     50                  55                  60

Tyr Asn Phe Ser Leu Val Ala Leu Ser Leu Tyr Ile Val Tyr Glu Phe
 65                  70                  75                  80

Leu Met Ser Gly Trp Leu Ser Thr Tyr Thr Trp Arg Cys Asp Pro Val
                 85                  90                  95

Asp Tyr Ser Asn Ser Pro Glu Ala Leu Arg Met Val Arg Val Ala Trp
                100                 105                 110

Leu Phe Leu Phe Ser Lys Phe Ile Glu Leu Met Asp Thr Val Ile Phe
             115                 120                 125
```

37

```
Ile Leu Arg Lys Lys Asp Gly Gln Val Thr Phe Leu His Val Phe His
    130             135             140

His Ser Val Leu Pro Trp Ser Trp Trp Gly Val Lys Ile Ala Pro
145                 150             155             160

Gly Gly Met Gly Ser Phe His Ala Met Ile Asn Ser Ser Val His Val
                165             170             175

Ile Met Tyr Leu Tyr Tyr Gly Leu Ser Ala Phe Gly Pro Val Ala Gln
            180             185             190

Pro Tyr Leu Trp Trp Lys Lys His Met Thr Ala Ile Gln Leu Ile Gln
        195             200             205

Phe Val Leu Val Ser Leu His Ile Ser Gln Tyr Tyr Phe Met Ser Ser
    210             215             220

Cys Asn Tyr Gln Tyr Pro Val Ile Ile His Leu Ile Trp Met Tyr Gly
225             230             235             240

Thr Ile Phe Phe Met Leu Phe Ser Asn Phe Trp Tyr His Ser Tyr Thr
            245             250             255

Lys Gly Lys Arg Leu Pro Arg Ala Leu Gln Gln Asn Gly Ala Pro Gly
            260             265             270

Ile Ala Lys Val Lys Ala Asn
            275


<210> 28
<211> 1472
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (119)..(955)

<400> 28
gcccagcaga tgaggaagtg gcaggcaggc aggctggccc cggggacttc tctctggccc 60

tgctccctcc gagcgctccg ccgttgcccg cctggcccct acggagtcct tagccagg   118

atg gag gct gtt gtg aac ttg tac caa gag gtg atg aag cac gca gat   166
Met Glu Ala Val Val Asn Leu Tyr Gln Glu Val Met Lys His Ala Asp
 1               5                  10                  15

ccc cgg atc cag ggc tac cct ctg atg ggg tcc ccc ttg cta atg acc   214
Pro Arg Ile Gln Gly Tyr Pro Leu Met Gly Ser Pro Leu Leu Met Thr
            20                  25                  30

tcc att ctc ctg acc tac gtg tac ttc gtt ctc tca ctt ggg cct cgc   262
Ser Ile Leu Leu Thr Tyr Val Tyr Phe Val Leu Ser Leu Gly Pro Arg
            35                  40                  45
```

38

```
atc atg gct aat cgg aag ccc ttc cag ctc cgt ggc ttc atg att gtc       310
Ile Met Ala Asn Arg Lys Pro Phe Gln Leu Arg Gly Phe Met Ile Val
     50                    55                 60

tac aac ttc tca ctg gtg gca ctc tcc ctc tac att gtc tat gag ttc       358
Tyr Asn Phe Ser Leu Val Ala Leu Ser Leu Tyr Ile Val Tyr Glu Phe
 65                    70                 75                    80

ctg atg tcg ggc tgg ctg agc acc tat acc tgg cgc tgt gac cct gtg       406
Leu Met Ser Gly Trp Leu Ser Thr Tyr Thr Trp Arg Cys Asp Pro Val
                 85                 90                    95

gac tat tcc aac agc cct gag gca ctt agg atg gtt cgg gtg gcc tgg       454
Asp Tyr Ser Asn Ser Pro Glu Ala Leu Arg Met Val Arg Val Ala Trp
                 100               105               110

ctc ttc ctc ttc tcc aag ttc att gag ctg atg gac aca gtg atc ttt       502
Leu Phe Leu Phe Ser Lys Phe Ile Glu Leu Met Asp Thr Val Ile Phe
             115               120               125

att ctc cga aag aaa gac ggg cag gtg acc ttc cta cat gtc ttc cat       550
Ile Leu Arg Lys Lys Asp Gly Gln Val Thr Phe Leu His Val Phe His
     130               135               140

cac tct gtg ctt ccc tgg agc tgg tgg tgg ggg gta aag att gcc ccg       598
His Ser Val Leu Pro Trp Ser Trp Trp Trp Gly Val Lys Ile Ala Pro
145               150               155               160

gga gga atg ggc tct ttc cat gcc atg ata aac tct tcc gtg cat gtc       646
Gly Gly Met Gly Ser Phe His Ala Met Ile Asn Ser Ser Val His Val
                 165               170               175

ata atg tac ctg tac tac gga tta tct gcc ttt ggc cct gtg gca caa       694
Ile Met Tyr Leu Tyr Tyr Gly Leu Ser Ala Phe Gly Pro Val Ala Gln
                 180               185               190

ccc tac ctt tgg tgg aaa aag cac atg aca gcc att cag ctg atc cag       742
Pro Tyr Leu Trp Trp Lys Lys His Met Thr Ala Ile Gln Leu Ile Gln
                 195               200               205

ttt gtc ctg gtc tca ctg cac atc tcc cag tac tac ttt atg tcc agc       790
Phe Val Leu Val Ser Leu His Ile Ser Gln Tyr Tyr Phe Met Ser Ser
     210               215               220

tgt aac tac cag tac cca gtc att att cac ctc atc tgg atg tat ggc       838
Cys Asn Tyr Gln Tyr Pro Val Ile Ile His Leu Ile Trp Met Tyr Gly
225               230               235               240

acc atc ttc ttc atg ctg ttc tcc aac ttc tgg tat cac tct tat acc       886
Thr Ile Phe Phe Met Leu Phe Ser Asn Phe Trp Tyr His Ser Tyr Thr
             245               250               255

aag ggc aag cgg ctg ccc cgt gca ctt cag caa aat gga gct cca ggt       934
Lys Gly Lys Arg Leu Pro Arg Ala Leu Gln Gln Asn Gly Ala Pro Gly
             260               265               270

att gcc aag gtc aag gcc aac tgagaagcat ggcctagata ggcgcccacc         985
Ile Ala Lys Val Lys Ala Asn
```

39

```
Ile Ala Lys Val Lys Ala Asn
        275

taagtgcctc aggactgcac cttagggcag tgtccgtcag tgccctctcc acctacacct 1045

gtgaccaagg cttatgtggt caggactgag caggggactg ccctcccct ccccacagct 1105

gctctacagg gaccacggct ttggttcctc acccacttcc cccgggcagc tccagggatg 1165

tggcctcatt gctgtctgcc actccagagc tgggggctaa aagggctgta cagttatttc 1225

cccctccctg ccttaaaact tgggagagga gcactcaggg ctggccccac aaagggtctc 1285

gtggcctttt tcctcacaca gaagaggtca gcaataatgt cactgtggac ccagtctcac 1345

tcctccaccc cacacactga agcagtagct tctgggccaa aggtcagggt gggcggggc 1405

ctgggaatac agcctgtgga ggctgcttac tcaacttgtg tcttaattaa aagtgacaga 1465

ggaaacc                                                          1472
```

<210> 29
<211> 137
<212> PRT
<213> Homo sapiens

<400> 29

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Met Gly Phe Gly Ala Thr Leu Ala Val Gly Leu Thr Ile Phe Val Leu
  1               5                  10                  15

Ser Val Val Thr Ile Ile Ile Cys Phe Thr Cys Ser Cys Cys Cys Leu
            20                  25                  30

Tyr Lys Thr Cys Arg Arg Pro Arg Pro Val Val Thr Thr Thr Thr Ser
        35                  40                  45

Thr Thr Val Val His Ala Pro Tyr Pro Gln Pro Pro Ser Val Pro Pro
    50                  55                  60

Ser Tyr Pro Gly Pro Ser Tyr Gln Gly Tyr His Thr Met Pro Pro Gln
65                  70                  75                  80

Pro Gly Met Pro Ala Ala Pro Tyr Pro Met Gln Tyr Pro Pro Pro Tyr
                85                  90                  95

Pro Ala Gln Pro Met Gly Pro Pro Ala Tyr His Glu Thr Leu Ala Gly
            100                 105                 110

Gly Ala Ala Ala Pro Tyr Pro Ala Ser Gln Pro Pro Tyr Asn Pro Ala
        115                 120                 125

Tyr Met Asp Ala Pro Lys Ala Ala Leu
    130                 135
```

<210> 30

<211> 1788
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (145)..(555)

<400> 30
gtgcttcctg tggctgacgt catctggagg agatttgctt tcttttttctc caaaaggggga 60

ggaaattgaa actgagtggc ccacgatggg aagagggggaa agcccagggg tacaggaggc 120

ctctgggtga aggcagaggc taac atg ggg ttc gga gcg acc ttg gcc gtt   171
                          Met Gly Phe Gly Ala Thr Leu Ala Val
                           1   5

ggc ctg acc atc ttt gtg ctg tct gtc gtc act atc atc atc tgc ttc   219
Gly Leu Thr Ile Phe Val Leu Ser Val Val Thr Ile Ile Ile Cys Phe
 10   15   20   25

acc tgc tcc tgc tgc tgc ctt tac aag acg tgc cgc cga cca cgt ccg   267
Thr Cys Ser Cys Cys Cys Leu Tyr Lys Thr Cys Arg Arg Pro Arg Pro
                 30   35   40

gtt gtc acc acc acc aca tcc acc act gtg gtg cat gcc cct tat cct   315
Val Val Thr Thr Thr Thr Ser Thr Thr Val Val His Ala Pro Tyr Pro
                 45   50   55

cag cct cca agt gtg ccg ccc agc tac cct gga cca agc tac cag ggc   363
Gln Pro Pro Ser Val Pro Pro Ser Tyr Pro Gly Pro Ser Tyr Gln Gly
             60   65   70

tac cac acc atg ccg cct cag cca ggg atg cca gca gca ccc tac cca   411
Tyr His Thr Met Pro Pro Gln Pro Gly Met Pro Ala Ala Pro Tyr Pro
     75   80   85

atg cag tac cca cca cct tac cca gcc cag ccc atg ggc cca ccg gcc   459
Met Gln Tyr Pro Pro Pro Tyr Pro Ala Gln Pro Met Gly Pro Pro Ala
 90   95   100   105

tac cac gag acc ctg gct gga gga gca gcc gcg ccc tac ccc gcc agc   507
Tyr His Glu Thr Leu Ala Gly Gly Ala Ala Ala Pro Tyr Pro Ala Ser
                 110   115   120

cag cct cct tac aac ccg gcc tac atg gat gcc ccg aag gcg gcc ctc   555
Gln Pro Pro Tyr Asn Pro Ala Tyr Met Asp Ala Pro Lys Ala Ala Leu
             125   130   135

tgagcattcc ctggcctctc tggctgccac ttggttatgt tgtgtgtgtg cgtgagtggt 615

gtgcaggcgc ggttccttac gccccatgtg tgctgtgtgt gtccaggcac ggttccttac 675

gccccatgtg tgctgtgtgt gtcctgcctg tatatgtggc ttcctctgat gctgacaagg 735

tggggaacaa tccttgccag agtgggctgg gaccagactt tgttctcttc ctcacctgaa 795

41

attatgcttc ctaaaatctc aagccaaact caaagaatgg ggtggtgggg ggcaccctgt 855

gaggtggccc ctgagaggtg ggggcctctc cagggcacat ctggagttct tctccagctt 915

accctagggt gaccaagtag ggcctgtcac accagggtgg cgcagctttc tgtgtgatgc 975

agatgtgtcc tggtttcggc agcgtagcca gctgctgctt gaggccatgg ctcgtccccg 1035

gagttggggg tacccgttgc agagccaggg acatgatgca ggcgaagctt gggatctggc 1095

caagttggac tttgatcctt tgggcagatg tcccattgct ccctggagcc tgtcatgcct 1155

gttggggatc aggcagcctc ctgatgccag aacacctcag gcagagccct actcagctgt 1215

acctgtctgc ctggactgtc ccctgtcccc gcatctcccc tgggaccagc tggagggcca 1275

catgcacaca cagcctagct gcccccaggg agctctgctg cccttgctgg ccctgccctt 1335

cccacaggtg agcagggctc ctgtccacca gcacactcag ttctcttccc tgcagtgttt 1395

tcattttatt ttagccaaac attttgcctg ttttctgttt caaacatkat agttgatatg 1455

agactgaaac ccctggggttg tggagggaaa ttggctcaga gatggacaac ctggcaactg 1515

tgagtccctg cttcccgaca ccagcctcat ggaatatgca acaactcctg taccccagtc 1575

cacggtgttc tggcagcagg gacacctggg ccaatgggcc atctggacca aaggtggggt 1635

gtggggccct ggatggcagc tctggcccag acatgaatac ctcgtgttcc tcctccctct 1695

attactgttt caccagagct gtcttagctc aaatctgttg tgtttctgag tctagggtct 1755

gtacacttgt ttataataaa tgcaatcgtt tgg   1788

<210> 31
<211> 118
<212> PRT
<213> Homo sapiens

<400> 31
Met Gly Phe Gly Ala Thr Leu Ala Val Gly Leu Thr Ile Phe Val Leu
 1   5   10   15

Ser Val Val Thr Ile Ile Ile Cys Phe Thr Cys Ser Cys Cys Cys Leu
            20   25   30

Tyr Lys Thr Cys Arg Arg Pro Arg Pro Val Val Thr Thr Thr Thr Ser
        35   40   45

Thr Thr Val Val His Ala Pro Tyr Pro Gln Pro Pro Ser Val Pro Pro
    50   55   60

Ser Tyr Pro Gly Pro Ser Tyr Gln Gly Tyr His Thr Met Pro Pro Gln
65   70   75   80

Pro Gly Met Pro Ala Ala Pro Tyr Pro Met Gln Tyr Pro Pro Pro Tyr

42

```
                85                    90                    95
Pro Ala Gln Pro Met Gly Pro Pro Ala Tyr His Glu Thr Leu Ala Gly
            100                   105                   110

Glu Cys Pro Cys Gln Leu
        115
```

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<210> 32
<211> 1908
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (91)..(444)

<400> 32
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ggaggcctct gggtgaaggc agaggctaac atg ggg ttc gga gcg acc ttg gcc   114
                                  Met Gly Phe Gly Ala Thr Leu Ala
                                   1               5

gtt ggc ctg acc atc ttt gtg ctg tct gtc gtc act atc atc atc tgc   162
Val Gly Leu Thr Ile Phe Val Leu Ser Val Val Thr Ile Ile Ile Cys
    10                  15                  20

ttc acc tgc tcc tgc tgc tgc ctt tac aag acg tgc cgc cga cca cgt   210
Phe Thr Cys Ser Cys Cys Cys Leu Tyr Lys Thr Cys Arg Arg Pro Arg
 25                  30                  35                  40

ccg gtt gtc acc acc acc aca tcc acc act gtg gtg cat gcc cct tat   258
Pro Val Val Thr Thr Thr Thr Ser Thr Thr Val Val His Ala Pro Tyr
                45                  50                  55

cct cag cct cca agt gtg ccg ccc agc tac cct gga cca agc tac cag   306
Pro Gln Pro Pro Ser Val Pro Pro Ser Tyr Pro Gly Pro Ser Tyr Gln
            60                  65                  70

ggc tac cac acc atg ccg cct cag cca ggg atg cca gca gca ccc tac   354
Gly Tyr His Thr Met Pro Pro Gln Pro Gly Met Pro Ala Ala Pro Tyr
            75                  80                  85

cca atg cag tac cca cca cct tac cca gcc cag ccc atg ggc cca ccg   402
Pro Met Gln Tyr Pro Pro Pro Tyr Pro Ala Gln Pro Met Gly Pro Pro
    90                  95                  100

gcc tac cac gag acc ctg gct ggt gag tgc ccc tgc caa ctc          444
Ala Tyr His Glu Thr Leu Ala Gly Glu Cys Pro Cys Gln Leu
105                 110                 115

tagccctgcc cgacttcccg agtctctgcc agcatccctc gggcacccat cccaaactac 504

atcactcaac aggcctctgc ccctttctgc ttgcctgcca ctcacacggc agcccaccat 564
```

43

```
gctcacagcc aaccagggtc ctctctgctt tcaggaggag cagccgcgcc ctaccccgcc   624

agccagcctc cttacaaccc ggcctacatg gatgccccga aggcggccct ctgagcattc   684

cctggcctct ctggctgcca cttggttatg ttgtgtgtgt gcgtgagtgg tgtgcaggcg   744

cggttcctta cgccccatgt gtgctgtgtg tgtccaggca cggttcctta cgccccatgt   804

gtgctgtgtg tgtcctgcct gtatatgtgg cttcctctga tgctgacaag gtggggaaca   864

atccttgcca gagtgggctg ggaccagact ttgttctctt cctcacctga aattatgctt   924

cctaaaatct caagccaaac tcaaagaatg gggtggtggg gggcaccctg tgaggtggcc   984

cctgagaggt gggggcctct ccagggcaca tctggagttc ttctccagct taccctaggg  1044

tgaccaagta gggcctgtca caccagggtg gcgcagcttt ctgtgtgatg cagatgtgtc  1104

ctggtttcgg cagcgtagcc agctgctgct tgaggccatg gctcgtcccc ggagttgggg  1164

gtacccgttg cagagccagg gacatgatgc aggcgaagct tgggatctgg ccaagttgga  1224

ctttgatcct ttgggcagat gtcccattgc tccctggagc ctgtcatgcc tgttggggat  1284

caggcagcct cctgatgcca gaacacctca ggcagagccc tactcagctg tacctgtctg  1344

cctggactgt cccctgtccc cgcatctccc ctgggaccag ctggagggcc acatgcacac  1404

acagcctagc tgcccccagg gagctctgct gcccttgctg ccctgccct tcccacaggt  1464

gagcagggct cctgtccacc agcacactca gttctcttcc ctgcagtgtt ttcattttat  1524

tttagccaaa cattttgcct gttttctgtt tcaaacatga tagttgatat gagactgaaa  1584

cccctggggtt gtggagggaa attggctcag agatggacaa cctggcaact gtgagtccct  1644

gcttcccgac accagcctca tggaatatgc aacaactcct gtaccccagt ccacggtgtt  1704

ctggcagcag ggacacctgg gccaatgggc catctggacc aaaggtgggg tgtggggccc  1764

tggatggcag ctctggccca gacatgaata cctcgtgttc ctcctccctc tattactgtt  1824

tcaccagagc tgtcttagct caaatctgtt gtgtttctga gtctagggtc tgtacacttg  1884

tttataataa atgcaatcgt ttgg                                         1908
```

<210> 33
<211> 168
<212> PRT
<213> Homo sapiens

<400> 33
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Met Asn Ser Lys Gly Gln Tyr Pro Thr Gln Pro Thr Tyr Pro Val Gln
  1               5                  10                  15

Pro Pro Gly Asn Pro Val Tyr Pro Gln Thr Leu His Leu Pro Gln Ala
```

44

```
              20                    25                    30
Pro Pro Tyr Thr Asp Ala Pro Pro Ala Tyr Ser Glu Leu Tyr Arg Pro
        35                    40                    45

Ser Phe Val His Pro Gly Ala Ala Thr Val Pro Thr Met Ser Ala Ala
    50                    55                    60

Phe Pro Gly Ala Ser Leu Tyr Leu Pro Met Ala Gln Ser Val Ala Val
65                    70                    75                    80

Gly Pro Leu Gly Ser Thr Ile Pro Met Ala Tyr Tyr Pro Val Gly Pro
            85                    90                    95

Ile Tyr Pro Pro Gly Ser Thr Val Leu Val Glu Gly Gly Tyr Asp Ala
        100                    105                    110

Gly Ala Arg Phe Gly Ala Gly Ala Thr Ala Gly Asn Ile Pro Pro Pro
        115                    120                    125

Pro Pro Gly Cys Pro Pro Asn Ala Ala Gln Leu Ala Val Met Gln Gly
    130                    135                    140

Ala Asn Val Leu Val Thr Gln Arg Lys Gly Asn Phe Phe Met Gly Gly
145                    150                    155                    160

Ser Asp Gly Gly Tyr Thr Ile Trp
            165
```

```
<210> 34
<211> 1897
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (70)..(573)

<400> 34
ctccgaacag gaagaggacg aaaaaaataa ccgtccgcga cgccgagaca aaccggaccc 60

gcaaccacc atg aac agc aaa ggt caa tat cca aca cag cca acc tac cct 111
          Met Asn Ser Lys Gly Gln Tyr Pro Thr Gln Pro Thr Tyr Pro
            1               5                    10

gtg cag cct cct ggg aat cca gta tac cct cag acc ttg cat ctt cct    159
Val Gln Pro Pro Gly Asn Pro Val Tyr Pro Gln Thr Leu His Leu Pro
 15                    20                    25                    30

cag gct cca ccc tat acc gat gct cca cct gcc tac tca gag ctc tat    207
Gln Ala Pro Pro Tyr Thr Asp Ala Pro Pro Ala Tyr Ser Glu Leu Tyr
                    35                    40                    45

cgt ccg agc ttt gtg cac cca ggg gct gcc aca gtc ccc acc atg tca    255
Arg Pro Ser Phe Val His Pro Gly Ala Ala Thr Val Pro Thr Met Ser
            50                    55                    60
```

45

```
gcc gca ttt cct gga gcc tct ctg tat ctt ccc atg gcc cag tct gtg   303
Ala Ala Phe Pro Gly Ala Ser Leu Tyr Leu Pro Met Ala Gln Ser Val
        65              70              75

gct gtt ggg cct tta ggt tcc aca atc ccc atg gct tat tat cca gtc   351
Ala Val Gly Pro Leu Gly Ser Thr Ile Pro Met Ala Tyr Tyr Pro Val
    80              85                  90

ggt ccc atc tat cca cct ggc tcc aca gtg ctg gtg gaa gga ggg tat   399
Gly Pro Ile Tyr Pro Pro Gly Ser Thr Val Leu Val Glu Gly Gly Tyr
 95              100             105                 110

gat gca ggt gcc aga ttt gga gct ggg gct act gct ggc aac att cct   447
Asp Ala Gly Ala Arg Phe Gly Ala Gly Ala Thr Ala Gly Asn Ile Pro
                115                 120                 125

cct cca cct cct gga tgc cct ccc aat gct gct cag ctt gca gtc atg   495
Pro Pro Pro Pro Gly Cys Pro Pro Asn Ala Ala Gln Leu Ala Val Met
                130                 135                 140

cag gga gcc aac gtc ctc gta act cag cgg aag ggg aac ttc ttc atg   543
Gln Gly Ala Asn Val Leu Val Thr Gln Arg Lys Gly Asn Phe Phe Met
            145                 150                 155

ggt ggt tca gat ggt ggc tac acc atc tgg tgaggaacca aggccacctc     593
Gly Gly Ser Asp Gly Gly Tyr Thr Ile Trp
    160                 165

tgtgccggga aagacatcac ataccttcag cacttctcac aatgtaactg ctttagtcat 653

attaacctga agttgcagtt tagacacatg ttgttggggt gtctttctgg tgcccaaact 713

ttcaggcact tttcaaattt aataaggaac catgtaatgg tagcagtacc tccctaaagc 773

attttgaggt aggggaggta tccattcata aaatgaatgt gggtgaagcc gccctaagga 833

ttttccttta atttctctgg agtaatactg taccatactg tctttgctt ttagtaataa  893

aacatcaaat taggtttgga gggaactttg atcttcctaa gaattaaagt tgccaaatta  953

ttctgattgg tctttaatct cctttaagtc tttgatatat attacttgtt ataaatggaa 1013

cgcattagtt gtctgccttt tcctttccat cccttgcccc acccatccca tctccaaccc 1073

tagtcttcca tttcctcccg ccagtctcca ttgaatcaat ggtgcaggac agaaagccag 1133

tcagactaat ttccttcttt cctcgcactt ctccccactc gtcatctttt aactagtgtt 1193

tcacaaggat cctctgaaac cctctctgtg ccccaagtac agatgccatt acttctgctt 1253

tcgtatctcc tcaggcaaaa gtggagggtg ccttatgggc cctcctcata ggttgtctct 1313

gcatacacga acctaaccca aatttgcttt ggtgccagaa aaactgagct atgtttgaac 1373

aaagatgtcg tgcaaactgt actgtgaaca acagttggtt taaaatatga ggggcaagga 1433
```

46

ggaggatgca tttcaaaagc ttgattgatg tgttcagagc taaattaaga ggagttttca 1493

gatcaaaaac tggttaccat tttttgtcag agtgtctgat gcggccactc attcggctcc 1553

ccagaattcc tagactgggt taataggotc atattgtgaa tgtctcacta caaaatgact 1613

tgagtccagt gaaatctcat tagggtttaa gaatatttca gggatcctta atgttttgat 1673

ttttgttttc tgaaattgga ttttatttta ttttatctta taatttcagt tcatctaaat 1733

tgtgtgttct gtacatgtga tgtttgactg taccattgac tgttatggaa gttcagcgtt 1793

gtatgtctct ctctacactg tggtgcactt aacttgtgga atttttatac taaaaatgta 1853

gaataaagac tattttgaag atttgaataa agtgatgaag ttgc   1897

<210> 35
<211> 455
<212> PRT
<213> Homo sapiens

<400> 35
Met Ser Phe Leu Ile Asp Ser Ser Ile Met Ile Thr Ser Gln Ile Leu
  1   5   10   15

Phe Phe Gly Phe Gly Trp Leu Phe Phe Met Arg Gln Leu Phe Lys Asp
            20   25   30

Tyr Glu Ile Arg Gln Tyr Val Val Gln Val Ile Phe Ser Val Thr Phe
        35   40   45

Ala Phe Ser Cys Thr Met Phe Glu Leu Ile Ile Phe Glu Ile Leu Gly
    50   55   60

Val Leu Asn Ser Ser Ser Arg Tyr Phe His Trp Lys Met Asn Leu Cys
65   70   75   80

Val Ile Leu Leu Ile Leu Val Phe Met Val Pro Phe Tyr Ile Gly Tyr
                85   90   95

Phe Ile Val Ser Asn Ile Arg Leu Leu His Lys Gln Arg Leu Leu Phe
            100   105   110

Ser Cys Leu Leu Trp Leu Thr Phe Met Tyr Phe Phe Trp Lys Leu Gly
        115   120   125

Asp Pro Phe Pro Ile Leu Ser Pro Lys His Gly Ile Leu Ser Ile Glu
    130   135   140

Gln Leu Ile Ser Arg Val Gly Val Ile Gly Val Thr Leu Met Ala Leu
145   150   155   160

Leu Ser Gly Phe Gly Ala Val Asn Cys Pro Tyr Thr Tyr Met Ser Tyr
                165   170   175

Phe Leu Arg Asn Val Thr Asp Thr Asp Ile Leu Ala Leu Glu Arg Arg

47

```
          180                      185                      190

Leu Leu Gln Thr Met Asp Met Ile Ile Ser Lys Lys Lys Arg Met Ala
        195                 200             205

Met Ala Arg Arg Thr Met Phe Gln Lys Gly Glu Val His Asn Lys Pro
        210             215                 220

Ser Gly Phe Trp Gly Met Ile Lys Ser Val Thr Thr Ser Ala Ser Gly
225                 230                 235                 240

Ser Glu Asn Leu Thr Leu Ile Gln Gln Glu Val Asp Ala Leu Glu Glu
            245                 250                 255

Leu Ser Arg Gln Leu Phe Leu Glu Thr Ala Asp Leu Tyr Ala Thr Lys
            260                 265                 270

Glu Arg Ile Glu Tyr Ser Lys Thr Phe Lys Gly Lys Tyr Phe Asn Phe
            275                 280                 285

Leu Gly Tyr Phe Phe Ser Ile Tyr Cys Val Trp Lys Ile Phe Met Ala
            290                 295                 300

Thr Ile Asn Ile Val Phe Asp Arg Val Gly Lys Thr Asp Pro Val Thr
305                 310                 315                 320

Arg Gly Ile Glu Ile Thr Val Asn Tyr Leu Gly Ile Gln Phe Asp Val
            325                 330                 335

Lys Phe Trp Ser Gln His Ile Ser Phe Ile Leu Val Gly Ile Ile Ile
            340                 345                 350

Val Thr Ser Ile Arg Gly Leu Leu Ile Thr Leu Thr Lys Phe Phe Tyr
            355                 360                 365

Ala Ile Ser Ser Ser Lys Ser Ser Asn Val Ile Val Leu Leu Leu Ala
            370                 375                 380

Gln Ile Met Gly Met Tyr Phe Val Ser Ser Val Leu Leu Ile Arg Met
385                 390                 395                 400

Ser Met Pro Leu Glu Tyr Arg Thr Ile Ile Thr Glu Val Leu Gly Glu
            405                 410                 415

Leu Gln Phe Asn Phe Tyr His Arg Trp Phe Asp Val Ile Phe Leu Val
            420                 425                 430

Ser Ala Leu Ser Ser Ile Leu Phe Leu Tyr Leu Ala His Lys Gln Ala
            435                 440                 445

Pro Glu Lys Gln Met Ala Pro
    450                 455
```

<210> 36
<211> 1903
<212> DNA

48

<213> Homo sapiens

<220>
<221> CDS
<222> (116)..(1480)

<400> 36
agtcccggct gcagcacctg ggagaaggca gaccgtgtga gggggcctgt ggccccagcg 60

tgctgtggcc tcggggagtg ggaagtggag gcaggagcct tccttacact cgcc atg 118
                                                            Met
                                                            1

agt ttc ctc atc gac tcc agc atc atg att acc tcc cag ata cta ttt   166
Ser Phe Leu Ile Asp Ser Ser Ile Met Ile Thr Ser Gln Ile Leu Phe
            5   10   15

ttt gga ttt ggg tgg ctt ttc ttc atg cgc caa ttg ttt aaa gac tat   214
Phe Gly Phe Gly Trp Leu Phe Phe Met Arg Gln Leu Phe Lys Asp Tyr
        20   25   30

gag ata cgt cag tat gtt gta cag gtg atc ttc tcc gtg acg ttt gca   262
Glu Ile Arg Gln Tyr Val Val Gln Val Ile Phe Ser Val Thr Phe Ala
    35   40   45

ttt tct tgc acc atg ttt gag ctc atc atc ttt gaa atc tta gga gta   310
Phe Ser Cys Thr Met Phe Glu Leu Ile Ile Phe Glu Ile Leu Gly Val
50   55   60   65

ttg aat agc agc tcc cgt tat ttt cac tgg aaa atg aac ctg tgt gta   358
Leu Asn Ser Ser Ser Arg Tyr Phe His Trp Lys Met Asn Leu Cys Val
                70   75   80

att ctg ctg atc ctg gtt ttc atg gtg cct ttt tac att ggc tat ttt   406
Ile Leu Leu Ile Leu Val Phe Met Val Pro Phe Tyr Ile Gly Tyr Phe
            85   90   95

att gtg agc aat atc cga cta ctg cat aaa caa cga ctg ctt ttt tcc   454
Ile Val Ser Asn Ile Arg Leu Leu His Lys Gln Arg Leu Leu Phe Ser
            100   105   110

tgt ctc tta tgg ctg acc ttt atg tat ttc ttc tgg aaa cta gga gat   502
Cys Leu Leu Trp Leu Thr Phe Met Tyr Phe Phe Trp Lys Leu Gly Asp
        115   120   125

ccc ttt ccc att ctc agc cca aaa cat ggg atc tta tcc ata gaa cag   550
Pro Phe Pro Ile Leu Ser Pro Lys His Gly Ile Leu Ser Ile Glu Gln
130   135   140   145

ctc atc agc cgg gtt ggt gtg att gga gtg act ctc atg gct ctt ctt   598
Leu Ile Ser Arg Val Gly Val Ile Gly Val Thr Leu Met Ala Leu Leu
                150   155   160

tct gga ttt ggt gct gtc aac tgc cca tac act tac atg tct tac ttc   646
Ser Gly Phe Gly Ala Val Asn Cys Pro Tyr Thr Tyr Met Ser Tyr Phe
            165   170   175

49

```
ctc agg aat gtg act gac acg gat att cta gcc ctg gaa cgg cga ctg      694
Leu Arg Asn Val Thr Asp Thr Asp Ile Leu Ala Leu Glu Arg Arg Leu
        180                 185                 190

ctg caa acc atg gat atg atc ata agc aaa aag aaa agg atg gca atg      742
Leu Gln Thr Met Asp Met Ile Ile Ser Lys Lys Lys Arg Met Ala Met
    195                 200                 205

gca cgg aga aca atg ttc cag aag ggg gaa gtg cat aac aaa cca tca      790
Ala Arg Arg Thr Met Phe Gln Lys Gly Glu Val His Asn Lys Pro Ser
210                 215                 220                 225

ggt ttc tgg gga atg ata aaa agt gtt acc act tca gca tca gga agt      838
Gly Phe Trp Gly Met Ile Lys Ser Val Thr Thr Ser Ala Ser Gly Ser
                230                 235                 240

gaa aat ctt act ctt att caa cag gaa gtg gat gct ttg gaa gaa tta      886
Glu Asn Leu Thr Leu Ile Gln Gln Glu Val Asp Ala Leu Glu Glu Leu
                245                 250                 255

agc agg cag ctt ttt ctg gaa aca gct gat cta tat gct acc aag gag      934
Ser Arg Gln Leu Phe Leu Glu Thr Ala Asp Leu Tyr Ala Thr Lys Glu
        260                 265                 270

aga ata gaa tac tcc aaa acc ttc aag ggg aaa tat ttt aat ttt ctt      982
Arg Ile Glu Tyr Ser Lys Thr Phe Lys Gly Lys Tyr Phe Asn Phe Leu
        275                 280                 285

ggt tac ttt ttc tct att tac tgt gtt tgg aaa att ttc atg gct acc      1030
Gly Tyr Phe Phe Ser Ile Tyr Cys Val Trp Lys Ile Phe Met Ala Thr
290                 295                 300                 305

atc aat att gtt ttt gat cga gtt ggg aaa acg gat cct gtc aca aga      1078
Ile Asn Ile Val Phe Asp Arg Val Gly Lys Thr Asp Pro Val Thr Arg
                310                 315                 320

ggc att gag atc act gtg aat tat ctg gga atc caa ttt gat gtg aag      1126
Gly Ile Glu Ile Thr Val Asn Tyr Leu Gly Ile Gln Phe Asp Val Lys
                325                 330                 335

ttt tgg tcc caa cac att tcc ttc att ctt gtt gga ata atc atc gtc      1174
Phe Trp Ser Gln His Ile Ser Phe Ile Leu Val Gly Ile Ile Ile Val
                340                 345                 350

aca tcc atc aga gga ttg ctg atc act ctt acc aag ttc ttt tat gcc      1222
Thr Ser Ile Arg Gly Leu Leu Ile Thr Leu Thr Lys Phe Phe Tyr Ala
        355                 360                 365

atc tct agc agt aag tcc tcc aat gtc att gtc ctg cta tta gca cag      1270
Ile Ser Ser Ser Lys Ser Ser Asn Val Ile Val Leu Leu Leu Ala Gln
370                 375                 380                 385

ata atg ggc atg tac ttt gtc tcc tct gtg ctg ctg atc cga atg agt      1318
Ile Met Gly Met Tyr Phe Val Ser Ser Val Leu Leu Ile Arg Met Ser
                390                 395                 400

atg cct tta gaa tac cgc acc ata atc act gaa gtc ctt gga gaa ctg      1366
```

50

```
Met Pro Leu Glu Tyr Arg Thr Ile Ile Thr Glu Val Leu Gly Glu Leu
        405                     410                     415

cag ttc aac ttc tat cac cgt tgg ttt gat gtg atc ttc ctg gtc agc   1414
Gln Phe Asn Phe Tyr His Arg Trp Phe Asp Val Ile Phe Leu Val Ser
        420                     425                     430

gct ctc tct agc ata ctc ttc ctc tat ttg gct cac aaa cag gca cca   1462
Ala Leu Ser Ser Ile Leu Phe Leu Tyr Leu Ala His Lys Gln Ala Pro
        435                     440                     445

gag aag caa atg gca cct tgaacttaag cctactacag actgttagag           1510
Glu Lys Gln Met Ala Pro
450                 455

gccagtggtt tcaaaattta gatataagag gggggaaaaa tggaaccagg gcctgacatt 1570

ttataaacaa acaaaatgct atggtagcat ttttcacctt catagcatac tccttccccg 1630

tcaggtgata ctatgaccat gagtagcatc agccagaaca tgagagggag aactaactca 1690

agacaatact cagcagagag catcccgtgt ggatatgagg ctggtgtaga ggcggagagg 1750

agccaagaaa ctaaaggtga aaaatacact ggaactctgg ggcaagacat gtctatggta 1810

gctgagccaa acacgtagga tttccgtttt aaggttcaca tggaaaaggt tatagctttg 1870

ccttgagatt gactcattaa aatcagagac tgt                               1903


<210> 37
<211> 322
<212> PRT
<213> Homo sapiens

<400> 37
Met Ser Ser Leu Gly Gly Gly Ser Gln Asp Ala Gly Gly Ser Ser Ser
 1               5                   10                  15

Ser Ser Thr Asn Gly Ser Gly Gly Ser Gly Ser Ser Gly Pro Lys Ala
            20                  25                  30

Gly Ala Ala Asp Lys Ser Ala Val Val Ala Ala Ala Ala Pro Ala Ser
        35                  40                  45

Val Ala Asp Asp Thr Pro Pro Pro Glu Arg Arg Asn Lys Ser Gly Ile
    50                  55                  60

Ile Ser Glu Pro Leu Asn Lys Ser Leu Arg Arg Ser Arg Pro Leu Ser
65                  70                  75                  80

His Tyr Ser Ser Phe Gly Ser Ser Gly Gly Ser Gly Gly Gly Ser Met
                85                  90                  95

Met Gly Gly Glu Ser Ala Asp Lys Ala Thr Ala Ala Ala Ala Ala Ala
            100                 105                 110
```

51

```
Ser Leu Leu Ala Asn Gly His Asp Leu Ala Ala Ala Met Ala Val Asp
        115                 120                 125

Lys Ser Asn Pro Thr Ser Lys His Lys Ser Gly Ala Val Ala Ser Leu
    130                 135                 140

Leu Ser Lys Ala Glu Arg Ala Thr Glu Leu Ala Ala Glu Gly Gln Leu
145                 150                 155                 160

Thr Leu Gln Gln Phe Ala Gln Ser Thr Glu Met Leu Lys Arg Val Val
                165                 170                 175

Gln Glu His Leu Pro Leu Met Ser Glu Ala Gly Ala Gly Leu Pro Asp
            180                 185                 190

Met Glu Ala Val Ala Gly Ala Glu Ala Leu Asn Gly Gln Ser Asp Phe
        195                 200                 205

Pro Tyr Leu Gly Ala Phe Pro Ile Asn Pro Gly Leu Phe Ile Met Thr
    210                 215                 220

Pro Ala Gly Val Phe Leu Ala Glu Ser Ala Leu His Met Ala Gly Leu
225                 230                 235                 240

Ala Glu Tyr Pro Met Gln Gly Glu Leu Ala Ser Ala Ile Ser Ser Gly
            245                 250                 255

Lys Lys Lys Arg Lys Arg Cys Gly Met Cys Ala Pro Cys Arg Arg Arg
            260                 265                 270

Ile Asn Cys Glu Gln Cys Ser Ser Cys Arg Asn Arg Lys Thr Gly His
        275                 280                 285

Gln Ile Cys Lys Phe Arg Lys Cys Glu Glu Leu Lys Lys Lys Pro Ser
    290                 295                 300

Ala Ala Leu Glu Lys Val Met Leu Pro Thr Gly Ala Ala Phe Arg Trp
305                 310                 315                 320

Phe Gln
```

```
<210> 38
<211> 1448
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (292)..(1257)

<400> 38
tactgctggc ggctggagcg gagcgcaccg cggcggtggt gcccagagcg gagcgcagct 60

ccctgccccg cccctccccc tcggcctcgc ggcgacggcg gcggtggcgg cttggacgac 120
```

```
tcggagagcc gagtgaagac atttccacct ggacacctga ccatgtgcct gccctgagca 180

gcgaggccca ccaggcatct ctgttgtggg cagcagggcc aggtcctggt ctgtggaccc 240

tcggcagttg gcaggctccc tctgcagtgg ggtctgggcc tcggccccac c atg tcg  297
                                                          Met Ser
                                                            1
```

```
agc ctc ggc ggt ggc tcc cag gat gcc ggc ggc agt agc agc agc agc  345
Ser Leu Gly Gly Gly Ser Gln Asp Ala Gly Gly Ser Ser Ser Ser Ser
          5                   10                  15

acc aat ggc agc ggt ggc agt ggc agc agt ggc cca aag gca gga gca  393
Thr Asn Gly Ser Gly Gly Ser Gly Ser Ser Gly Pro Lys Ala Gly Ala
        20                  25                  30

gca gac aag agt gca gtg gtg gct gcc gcc gca cca gcc tca gtg gca  441
Ala Asp Lys Ser Ala Val Val Ala Ala Ala Ala Pro Ala Ser Val Ala
    35                  40                  45              50

gat gac aca cca ccc ccc gag cgt cgg aac aag agc ggt atc atc agt  489
Asp Asp Thr Pro Pro Pro Glu Arg Arg Asn Lys Ser Gly Ile Ile Ser
                55                  60                  65

gag ccc ctc aac aag agc ctg cgc cgc tcc cgc ccg ctc tcc cac tac  537
Glu Pro Leu Asn Lys Ser Leu Arg Arg Ser Arg Pro Leu Ser His Tyr
                70                  75                  80

tct tct ttt ggc agc agt ggt ggt agt ggc ggt ggc agc atg atg ggc  585
Ser Ser Phe Gly Ser Ser Gly Gly Ser Gly Gly Gly Ser Met Met Gly
            85                  90                  95

gga gag tct gct gac aag gcc act gcg gct gca gcc gct gcc tcc ctg  633
Gly Glu Ser Ala Asp Lys Ala Thr Ala Ala Ala Ala Ala Ala Ser Leu
    100                 105                 110

ttg gcc aat ggg cat gac ctg gcg gcg gcc atg gcg gtg gac aaa agc  681
Leu Ala Asn Gly His Asp Leu Ala Ala Ala Met Ala Val Asp Lys Ser
115                 120                 125                 130

aac cct acc tca aag cac aaa agt ggt gct gtg gcc agc ctg ctg agc  729
Asn Pro Thr Ser Lys His Lys Ser Gly Ala Val Ala Ser Leu Leu Ser
                135                 140                 145

aag gca gag cgg gcc acg gag ctg gca gcc gag gga cag ctg acg ctg  777
Lys Ala Glu Arg Ala Thr Glu Leu Ala Ala Glu Gly Gln Leu Thr Leu
                150                 155                 160

cag cag ttt gcg cag tcc aca gag atg ctg aag cgc gtg gtg cag gag  825
Gln Gln Phe Ala Gln Ser Thr Glu Met Leu Lys Arg Val Val Gln Glu
            165                 170                 175

cat ctc ccg ctg atg agc gag gcg ggt gct ggc ctg cct gac atg gag  873
His Leu Pro Leu Met Ser Glu Ala Gly Ala Gly Leu Pro Asp Met Glu
        180                 185                 190

gct gtg gca ggt gcc gaa gcc ctc aat ggc cag tcc gac ttc ccc tac  921
```

53

```
Ala Val Ala Gly Ala Glu Ala Leu Asn Gly Gln Ser Asp Phe Pro Tyr
195             200             205             210

ctg ggc gct ttc ccc atc aac cca ggc ctc ttc att atg acc ccg gca    969
Leu Gly Ala Phe Pro Ile Asn Pro Gly Leu Phe Ile Met Thr Pro Ala
                215             220             225

ggt gtg ttc ctg gcc gag agc gcg ctg cac atg gcg ggc ctg gct gag   1017
Gly Val Phe Leu Ala Glu Ser Ala Leu His Met Ala Gly Leu Ala Glu
                230             235             240

tac ccc atg cag gga gag ctg gcc tct gcc atc agc tcc ggc aag aag   1065
Tyr Pro Met Gln Gly Glu Leu Ala Ser Ala Ile Ser Ser Gly Lys Lys
            245             250             255

aag cgg aaa cgc tgc ggc atg tgc gcg ccc tgc cgg cgg cgc atc aac   1113
Lys Arg Lys Arg Cys Gly Met Cys Ala Pro Cys Arg Arg Arg Ile Asn
    260             265             270

tgc gag cag tgc agc agt tgt agg aat cga aag act ggc cat cag att   1161
Cys Glu Gln Cys Ser Ser Cys Arg Asn Arg Lys Thr Gly His Gln Ile
275             280             285             290

tgc aaa ttc aga aaa tgt gag gaa ctc aaa aag aag cct tcc gct gct   1209
Cys Lys Phe Arg Lys Cys Glu Glu Leu Lys Lys Lys Pro Ser Ala Ala
                295             300             305

ctg gag aag gtg atg ctt ccg acg gga gcc gcc ttc cgg tgg ttt cag   1257
Leu Glu Lys Val Met Leu Pro Thr Gly Ala Ala Phe Arg Trp Phe Gln
                310             315             320

tgacggcggc ggaacccaaa gctgccctct ccgtgcaatg tcactgctcg tgtggtctcc  1317

agcaagggat tcgggcgaag acaaacggat gcaccgtct ttagaaccaa aaatattctc  1377

tcacagattt cattcctgtt tttatatata tattttttgt tgtcgtttta acatctccac  1437

gtccctagca t                                                       1448
```

<210> 39
<211> 313
<212> PRT
<213> Homo sapiens

<400> 39
```
Met Ala Gly Gln Pro Gly His Met Pro His Gly Gly Ser Ser Asn Asn
 1               5               10              15

Leu Cys His Thr Leu Gly Pro Val His Pro Pro Asp Pro Gln Arg His
            20              25              30

Pro Asn Thr Leu Ser Phe Arg Cys Ser Leu Ala Asp Phe Gln Ile Glu
            35              40              45

Lys Lys Ile Gly Arg Gly Gln Phe Ser Glu Val Tyr Lys Ala Thr Cys
    50              55              60
```

54

```
Leu Leu Asp Arg Lys Thr Val Ala Leu Lys Lys Val Gln Ile Phe Glu
 65              70              75              80

Met Met Asp Ala Lys Ala Arg Gln Asp Cys Val Lys Glu Ile Gly Leu
             85              90              95

Leu Lys Gln Leu Asn His Pro Asn Ile Ile Lys Tyr Leu Asp Ser Phe
            100             105             110

Ile Glu Asp Asn Glu Leu Asn Ile Val Leu Glu Leu Ala Asp Ala Gly
        115             120             125

Asp Leu Ser Gln Met Ile Lys Tyr Phe Lys Lys Gln Lys Arg Leu Ile
    130             135             140

Pro Glu Arg Thr Val Trp Lys Tyr Phe Val Gln Leu Cys Ser Ala Val
145             150             155             160

Glu His Met His Ser Arg Arg Val Met His Arg Asp Ile Lys Pro Ala
            165             170             175

Asn Val Phe Ile Thr Ala Thr Gly Val Val Lys Leu Gly Asp Leu Gly
        180             185             190

Leu Gly Arg Phe Phe Ser Ser Glu Thr Thr Ala Ala His Ser Leu Val
    195             200             205

Gly Thr Pro Tyr Tyr Met Ser Pro Glu Arg Ile His Glu Asn Gly Tyr
    210             215             220

Asn Phe Lys Ser Asp Ile Trp Ser Leu Gly Cys Leu Leu Tyr Glu Met
225             230             235             240

Ala Ala Leu Gln Ser Pro Phe Tyr Gly Asp Lys Met Asn Leu Phe Ser
            245             250             255

Leu Cys Gln Lys Ile Glu Gln Cys Asp Tyr Pro Pro Leu Pro Gly Glu
            260             265             270

His Tyr Ser Glu Lys Leu Arg Glu Leu Val Ser Met Cys Ile Cys Pro
    275             280             285

Asp Pro His Gln Arg Pro Asp Ile Gly Tyr Val His Gln Val Ala Lys
    290             295             300

Gln Met His Ile Trp Met Ser Ser Thr
305             310
```

```
<210> 40
<211> 1597
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
```

<222> (153)..(1091)

<400> 40

```
ggcggaaccg agctgacggg cgtgcggccg ctgcgccgca aactcgtgtg ggacgcaccg  60

ctccagccgc ccgcgggcca gcgcaccggt cccccagcgg cagccgagcc cgcccgcgcg  120

ccgttcgtgc cctcgtgagg ctggcatgca gg atg gca gga cag ccc ggc cac    173
                                      Met Ala Gly Gln Pro Gly His
                                       1               5
```

```
atg ccc cat gga ggg agt tcc aac aac ctc tgc cac acc ctg ggg cct    221
Met Pro His Gly Gly Ser Ser Asn Asn Leu Cys His Thr Leu Gly Pro
         10              15                  20
```

```
gtg cat cct cct gac cca cag agg cat ccc aac acg ctg tct ttt cgc    269
Val His Pro Pro Asp Pro Gln Arg His Pro Asn Thr Leu Ser Phe Arg
     25                  30                  35
```

```
tgc tcg ctg gcg gac ttc cag atc gaa aag aag ata ggc cga gga cag    317
Cys Ser Leu Ala Asp Phe Gln Ile Glu Lys Lys Ile Gly Arg Gly Gln
 40                  45                  50                  55
```

```
ttc agc gag gtg tac aag gcc acc tgc ctg ctg gac agg aag aca gtg    365
Phe Ser Glu Val Tyr Lys Ala Thr Cys Leu Leu Asp Arg Lys Thr Val
                 60                  65                  70
```

```
gct ctg aag aag gtg cag atc ttt gag atg atg gac gcc aag gcg agg    413
Ala Leu Lys Lys Val Gln Ile Phe Glu Met Met Asp Ala Lys Ala Arg
                 75                  80                  85
```

```
cag gac tgt gtc aag gag atc ggc ctc ttg aag caa ctg aac cac cca    461
Gln Asp Cys Val Lys Glu Ile Gly Leu Leu Lys Gln Leu Asn His Pro
             90                  95                 100
```

```
aat atc atc aag tat ttg gac tcg ttt atc gaa gac aac gag ctg aac    509
Asn Ile Ile Lys Tyr Leu Asp Ser Phe Ile Glu Asp Asn Glu Leu Asn
         105                 110                 115
```

```
att gtg ctg gag ttg gct gac gca ggg gac ctc tcg cag atg atc aag    557
Ile Val Leu Glu Leu Ala Asp Ala Gly Asp Leu Ser Gln Met Ile Lys
120                 125                 130                 135
```

```
tac ttt aag aag cag aag cgg ctc atc ccg gag agg aca gta tgg aag    605
Tyr Phe Lys Lys Gln Lys Arg Leu Ile Pro Glu Arg Thr Val Trp Lys
                 140                 145                 150
```

```
tac ttt gtg cag ctg tgc agc gcc gtg gag cac atg cat tca cgc cgg    653
Tyr Phe Val Gln Leu Cys Ser Ala Val Glu His Met His Ser Arg Arg
                 155                 160                 165
```

```
gtg atg cac cga gac atc aag cct gcc aac gtg ttc atc aca gcc acg    701
Val Met His Arg Asp Ile Lys Pro Ala Asn Val Phe Ile Thr Ala Thr
         170                 175                 180
```

```
ggc gtc gtg aag ctc ggt gac ctt ggt ctg ggc cgc ttc ttc agc tct    749
Gly Val Val Lys Leu Gly Asp Leu Gly Leu Gly Arg Phe Phe Ser Ser
```

56

```
              185                    190                    195
gag acc acc gca gcc cac tcc cta gtg ggg acg ccc tac tac atg tca   797
Glu Thr Thr Ala Ala His Ser Leu Val Gly Thr Pro Tyr Tyr Met Ser
200                 205                 210                 215

ccg gag agg atc cat gag aac ggc tac aac ttc aag tcc gac atc tgg   845
Pro Glu Arg Ile His Glu Asn Gly Tyr Asn Phe Lys Ser Asp Ile Trp
                220                 225                 230

tcc ttg ggc tgt ctg ctg tac gag atg gca gcc ctc cag agc ccc ttc   893
Ser Leu Gly Cys Leu Leu Tyr Glu Met Ala Ala Leu Gln Ser Pro Phe
                235                 240                 245

tat gga gat aag atg aat ctc ttc tcc ctg tgc cag aag atc gag cag   941
Tyr Gly Asp Lys Met Asn Leu Phe Ser Leu Cys Gln Lys Ile Glu Gln
                250                 255                 260

tgt gac tac ccc cca ctc ccc ggg gag cac tac tcc gag aag tta cga   989
Cys Asp Tyr Pro Pro Leu Pro Gly Glu His Tyr Ser Glu Lys Leu Arg
                265                 270                 275

gaa ctg gtc agc atg tgc atc tgc cct gac ccc cac cag aga cct gac   1037
Glu Leu Val Ser Met Cys Ile Cys Pro Asp Pro His Gln Arg Pro Asp
280                 285                 290                 295

atc gga tac gtg cac cag gtg gcc aag cag atg cac atc tgg atg tcc   1085
Ile Gly Tyr Val His Gln Val Ala Lys Gln Met His Ile Trp Met Ser
                300                 305                 310

agc acc tgagcgtgga tgcaccgtgc cttatcaaag ccagcaccac tttgccttac   1141
Ser Thr

ttgagtcgtc ttctcttcga gtggccacct ggtagcctag aacagctaag accacagggt 1201

tcagcaggtt ccccaaaagg ctgcccagcc ttacagcaga tgctgaaggc agagcagctg 1261

agggaggggc gctggccaca tgtcactgat ggtcagattc caaagtcctt tctttatact 1321

gttgtggaca atctcagctg ggtcaataag ggcaggtggt tcagcgagcc acggcagccc 1381

cctgtatctg gattgtaatg tgaatcttta gggtaattcc tccagtgacc tgtcaaggct 1441

tatgctaaca ggagacttgc aggagaccgt gtgatttgtg tagtgagcct ttgaaaatgg 1501

ttagtaccgg gttcagttta gttcttggta tcttttcaat caagctgtgt gcttaattta 1561

ctctgttgta aagggataaa gtggaaatca tttttt                          1597
```

<210> 41
<211> 371
<212> PRT
<213> Homo sapiens

<400> 41
Met Ser His Glu Lys Ser Phe Leu Val Ser Gly Asp Asn Tyr Pro Pro

57

```
      1                    5                    10                    15
Pro Asn Pro Gly Tyr Pro Gly Gly Pro Gln Pro Pro Met Pro Pro Tyr
            20                    25                    30
Ala Gln Pro Pro Tyr Pro Gly Ala Pro Tyr Pro Gln Pro Pro Phe Gln
            35                    40                    45
Pro Ser Pro Tyr Gly Gln Pro Gly Tyr Pro His Gly Pro Ser Pro Tyr
        50                    55                    60
Pro Gln Gly Gly Tyr Pro Gln Gly Pro Tyr Pro Gln Gly Gly Tyr Pro
65                    70                    75                    80
Gln Gly Pro Tyr Pro Gln Glu Gly Tyr Pro Gln Gly Pro Tyr Pro Gln
                85                    90                    95
Gly Gly Tyr Pro Gln Gly Pro Tyr Pro Gln Ser Pro Phe Pro Pro Asn
            100                   105                   110
Pro Tyr Gly Gln Pro Gln Val Phe Pro Gly Gln Asp Pro Asp Ser Pro
            115                   120                   125
Gln His Gly Asn Tyr Gln Glu Glu Gly Pro Pro Ser Tyr Tyr Asp Asn
    130                   135                   140
Gln Asp Phe Pro Ala Thr Asn Trp Asp Asp Lys Ser Ile Arg Gln Ala
145                   150                   155                   160
Phe Ile Arg Lys Val Phe Leu Val Leu Thr Leu Gln Leu Ser Val Thr
            165                   170                   175
Leu Ser Thr Val Ser Val Phe Thr Phe Val Ala Glu Val Lys Gly Phe
            180                   185                   190
Val Arg Glu Asn Val Trp Thr Tyr Tyr Val Ser Tyr Ala Val Phe Phe
        195                   200                   205
Ile Ser Leu Ile Val Leu Ser Cys Cys Gly Asp Phe Arg Arg Lys His
    210                   215                   220
Pro Trp Asn Leu Val Ala Leu Ser Val Leu Thr Ala Ser Leu Ser Tyr
225                   230                   235                   240
Met Val Gly Met Ile Ala Ser Phe Tyr Asn Thr Glu Ala Val Ile Met
            245                   250                   255
Ala Val Gly Ile Thr Thr Ala Val Cys Phe Thr Val Val Ile Phe Ser
            260                   265                   270
Met Gln Thr Arg Tyr Asp Phe Thr Ser Cys Met Gly Val Leu Leu Val
        275                   280                   285
Ser Met Val Val Leu Phe Ile Phe Ala Ile Leu Cys Ile Phe Ile Arg
    290                   295                   300
Asn Arg Ile Leu Glu Ile Val Tyr Ala Ser Leu Gly Ala Leu Leu Phe
```

58

```
305                    310                    315                    320
Thr Cys Phe Leu Ala Val Asp Thr Gln Leu Leu Leu Gly Asn Lys Gln
            325                    330                    335

Leu Ser Leu Ser Pro Glu Glu Tyr Val Phe Ala Ala Leu Asn Leu Tyr
            340                    345                    350

Thr Asp Ile Ile Asn Ile Phe Leu Tyr Ile Leu Thr Ile Ile Gly Arg
            355                    360                    365

Ala Lys Glu
    370
```

```
<210> 42
<211> 1781
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (91)..(1203)

<400> 42
attggccatc accgcgcggc cgcgcagcgg acaccgtgcg taccggcctg cggcgcccgg  60

ccaccggggc ggaccgcgga acccgaggcc atg tcc cat gaa aag agt ttt ttg  114
                                 Met Ser His Glu Lys Ser Phe Leu
                                  1               5

gtg tct ggg gac aac tat cct ccc ccc aac cct gga tat ccg ggg ggg  162
Val Ser Gly Asp Asn Tyr Pro Pro Pro Asn Pro Gly Tyr Pro Gly Gly
     10                  15                  20

ccc cag cca ccc atg ccc ccc tat gct cag cct ccc tac cct ggg gcc  210
Pro Gln Pro Pro Met Pro Pro Tyr Ala Gln Pro Pro Tyr Pro Gly Ala
 25                  30                  35                  40

cct tac cca cag ccc cct ttc cag ccc tcc ccc tac ggt cag cca ggg  258
Pro Tyr Pro Gln Pro Pro Phe Gln Pro Ser Pro Tyr Gly Gln Pro Gly
                 45                  50                  55

tac ccc cat ggc ccc agc ccc tac ccc caa ggg ggc tac cca cag ggt  306
Tyr Pro His Gly Pro Ser Pro Tyr Pro Gln Gly Gly Tyr Pro Gln Gly
             60                  65                  70

ccc tac ccc caa ggg ggc tac cca cag ggc ccc tac cca caa gag ggc  354
Pro Tyr Pro Gln Gly Gly Tyr Pro Gln Gly Pro Tyr Pro Gln Glu Gly
             75                  80                  85

tac cca cag ggc ccc tac ccc caa ggg ggc tac ccc cag ggg cca tat  402
Tyr Pro Gln Gly Pro Tyr Pro Gln Gly Gly Tyr Pro Gln Gly Pro Tyr
     90                  95                  100

ccc cag agc ccc ttc ccc ccc aac ccc tat gga cag cca cag gtc ttc  450
Pro Gln Ser Pro Phe Pro Pro Asn Pro Tyr Gly Gln Pro Gln Val Phe
```

```
105                          110                          115                          120

cca gga caa gac cct gac tca ccc cag cat gga aac tac cag gag gag   498
Pro Gly Gln Asp Pro Asp Ser Pro Gln His Gly Asn Tyr Gln Glu Glu
                125                 130                 135

ggt ccc cca tcc tac tat gac aac cag gac ttc cct gcc acc aac tgg   546
Gly Pro Pro Ser Tyr Tyr Asp Asn Gln Asp Phe Pro Ala Thr Asn Trp
                140                 145                 150

gat gac aag agc atc cga cag gcc ttc atc cgc aag gtg ttc cta gtg   594
Asp Asp Lys Ser Ile Arg Gln Ala Phe Ile Arg Lys Val Phe Leu Val
                155                 160                 165

ctg acc ttg cag ctg tcg gtg acc ctg tcc acg gtg tct gtg ttc act   642
Leu Thr Leu Gln Leu Ser Val Thr Leu Ser Thr Val Ser Val Phe Thr
                170                 175                 180

ttt gtt gcg gag gtg aag ggc ttt gtc cgg gag aat gtc tgg acc tac   690
Phe Val Ala Glu Val Lys Gly Phe Val Arg Glu Asn Val Trp Thr Tyr
185                 190                 195                 200

tat gtc tcc tat gct gtc ttc ttc atc tct ctc atc gtc ctc agc tgt   738
Tyr Val Ser Tyr Ala Val Phe Phe Ile Ser Leu Ile Val Leu Ser Cys
                205                 210                 215

tgt ggg gac ttc cgg cga aag cac ccc tgg aac ctt gtt gca ctg tcg   786
Cys Gly Asp Phe Arg Arg Lys His Pro Trp Asn Leu Val Ala Leu Ser
                220                 225                 230

gtc ctg acc gcc agc ctg tcg tac atg gtg ggg atg atc gcc agc ttc   834
Val Leu Thr Ala Ser Leu Ser Tyr Met Val Gly Met Ile Ala Ser Phe
                235                 240                 245

tac aac acc gag gca gtc atc atg gcc gtg ggc atc acc aca gcc gtc   882
Tyr Asn Thr Glu Ala Val Ile Met Ala Val Gly Ile Thr Thr Ala Val
                250                 255                 260

tgc ttc acc gtc gtc atc ttc tcc atg cag acc cgc tac gac ttc acc   930
Cys Phe Thr Val Val Ile Phe Ser Met Gln Thr Arg Tyr Asp Phe Thr
265                 270                 275                 280

tca tgc atg ggc gtg ctc ctg gtg agc atg gtg gtg ctc ttc atc ttc   978
Ser Cys Met Gly Val Leu Leu Val Ser Met Val Val Leu Phe Ile Phe
                285                 290                 295

gcc att ctc tgc atc ttc atc cgg aac cgc atc ctg gag atc gtg tac   1026
Ala Ile Leu Cys Ile Phe Ile Arg Asn Arg Ile Leu Glu Ile Val Tyr
                300                 305                 310

gcc tca ctg ggc gct ctg ctc ttc acc tgc ttc ctc gca gtg gac acc   1074
Ala Ser Leu Gly Ala Leu Leu Phe Thr Cys Phe Leu Ala Val Asp Thr
                315                 320                 325

cag ctg ctg ctg ggg aac aag cag ctg tcc ctg agc cca gaa gag tat   1122
Gln Leu Leu Leu Gly Asn Lys Gln Leu Ser Leu Ser Pro Glu Glu Tyr
                330                 335                 340
```

60

```
gtg ttt gct gcg ctg aac ctg tac aca gac atc atc aac atc ttc ctg      1170
Val Phe Ala Ala Leu Asn Leu Tyr Thr Asp Ile Ile Asn Ile Phe Leu
345                 350                 355                 360

tac atc ctc acc atc att ggc cgc gcc aag gag tagccgagct ccagctcgct    1223
Tyr Ile Leu Thr Ile Ile Gly Arg Ala Lys Glu
                365                 370

gtgcccgctc aggtggcacg gctggcctgg accctgcccc tggcacggca gtgccagctg    1283

tacttcccct ctctcttgtc cccaggcaca gcctagggaa aaggatgcct ctctccaacc    1343

ctcctgtatg tacactgcag atacttccat ttggacccgc tgtggccaca gcatggcccc    1403

tttagtcctc ccgcccccgc caaggggcag caaggccacg tttccgtgcc acctcctgtc    1463

tactcattgt tgcatgagcc ctgtctgcca gcccacccca gggactgggg gcagcaccag    1523

gtcccgggga gagggattga gccaagaggt gagggtgcac gtcttccctc ctgtcccagc    1583

tccccagcct ggcgtagagc acccctcccc tcccccccac cccctggag tgctgccctc     1643

tggggacatg cggagtgggg gtcttatccc tgtgctgagc cctgagggca gagaggatgg    1703

catgtttcag gggagggggga agccttcctc tcaatttgtt gtcagtgaaa ttccaataaa   1763

tgggatttgc tctctgcc                                                  1781
```

<210> 43
<211> 393
<212> PRT
<213> Homo sapiens

<400> 43
```
Met Ser Asp Glu Arg Glu Val Ala Glu Ala Ala Thr Gly Glu Asp Ala
  1               5                  10                  15

Ser Ser Pro Pro Pro Lys Thr Glu Ala Ala Ser Asp Pro Gln His Pro
            20                  25                  30

Ala Ala Ser Glu Gly Ala Ala Ala Ala Ala Ala Ser Pro Pro Leu Leu
        35                  40                  45

Arg Cys Leu Val Leu Thr Gly Phe Gly Gly Tyr Asp Lys Val Lys Leu
    50                  55                  60

Gln Ser Arg Pro Ala Ala Pro Pro Ala Pro Gly Pro Gly Gln Leu Thr
 65                  70                  75                  80

Leu Arg Leu Arg Ala Cys Gly Leu Asn Phe Ala Asp Leu Met Ala Arg
                85                  90                  95

Gln Gly Leu Tyr Asp Arg Leu Pro Pro Leu Pro Val Thr Pro Gly Met
               100                 105                 110
```

61

```
Glu Gly Ala Gly Val Val Ile Ala Val Gly Glu Gly Val Ser Asp Arg
        115             120             125

Lys Ala Gly Asp Arg Val Met Val Leu Asn Arg Ser Gly Met Trp Gln
    130             135             140

Glu Glu Val Thr Val Pro Ser Val Gln Thr Phe Leu Ile Pro Glu Ala
145             150             155             160

Met Thr Phe Glu Glu Ala Ala Ala Leu Leu Val Asn Tyr Ile Thr Ala
            165             170                 175

Tyr Met Val Leu Phe Asp Phe Gly Asn Leu Gln Pro Gly His Ser Val
            180             185             190

Leu Val His Met Ala Ala Gly Gly Val Gly Met Ala Ala Val Gln Leu
        195             200             205

Cys Arg Thr Val Glu Asn Val Thr Val Phe Gly Thr Ala Ser Ala Ser
    210             215             220

Lys His Glu Ala Leu Lys Glu Asn Gly Val Thr His Pro Ile Asp Tyr
225             230             235             240

His Thr Thr Asp Tyr Val Asp Glu Ile Lys Lys Ile Ser Pro Lys Gly
            245             250             255

Val Asp Ile Val Met Asp Pro Leu Gly Gly Ser Asp Thr Ala Lys Gly
            260             265             270

Tyr Asn Leu Leu Lys Pro Met Gly Lys Val Val Thr Tyr Gly Met Ala
        275             280             285

Asn Leu Leu Thr Gly Pro Lys Arg Asn Leu Met Ala Leu Ala Arg Thr
    290             295             300

Trp Trp Asn Gln Phe Ser Val Thr Ala Leu Gln Leu Leu Gln Ala Asn
305             310             315             320

Arg Ala Val Cys Gly Phe His Leu Gly Tyr Leu Asp Gly Glu Val Glu
            325             330             335

Leu Val Ser Gly Val Val Ala Arg Leu Leu Ala Leu Tyr Asn Gln Gly
            340             345             350

His Ile Lys Pro His Ile Asp Ser Val Trp Pro Phe Glu Lys Val Ala
            355             360             365

Asp Ala Met Lys Gln Met Gln Glu Lys Lys Asn Val Gly Lys Val Leu
    370             375             380

Leu Val Pro Gly Pro Glu Lys Glu Asn
385             390
```

<210> 44
<211> 2396

62

```
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (50)..(1228)

<400> 44
agctgtgcac tctccatcca gctgtgcgct ctcgtcggga gtcccagcc atg tcc gac 58
                                                         Met Ser Asp
                                                          1

gag aga gag gta gcc gag gca gcg acc ggg gaa gac gcc tct tcg ccg   106
Glu Arg Glu Val Ala Glu Ala Ala Thr Gly Glu Asp Ala Ser Ser Pro
     5                  10                  15

cct ccg aaa acc gag gca gcg agc gac ccc cag cat ccc gcg gcc tcc   154
Pro Pro Lys Thr Glu Ala Ala Ser Asp Pro Gln His Pro Ala Ala Ser
 20                  25                  30                  35

gaa ggg gcc gcc gcc gcc gcc gcc tcg ccg cca ctg ctg cgc tgc cta   202
Glu Gly Ala Ala Ala Ala Ala Ala Ser Pro Pro Leu Leu Arg Cys Leu
                 40                  45                  50

gtg ctc acc ggc ttt gga ggc tac gac aag gtg aag ctg cag agc cgg   250
Val Leu Thr Gly Phe Gly Gly Tyr Asp Lys Val Lys Leu Gln Ser Arg
                 55                  60                  65

ccg gca gcg ccc ccg gcc cct ggg ccc ggc cag ctg acg ctg cgt ctg   298
Pro Ala Ala Pro Pro Ala Pro Gly Pro Gly Gln Leu Thr Leu Arg Leu
                 70                  75                  80

cgg gcc tgc ggg ctc aac ttc gca gac ctc atg gct agg cag ggg ctg   346
Arg Ala Cys Gly Leu Asn Phe Ala Asp Leu Met Ala Arg Gln Gly Leu
     85                  90                  95

tac gac cgt ctc ccg cct ctg cct gtc act ccg ggc atg gag ggc gcg   394
Tyr Asp Arg Leu Pro Pro Leu Pro Val Thr Pro Gly Met Glu Gly Ala
100                 105                 110                 115

ggt gtt gtg atc gca gtg ggc gag gga gtc agc gac cgc aag gca gga   442
Gly Val Val Ile Ala Val Gly Glu Gly Val Ser Asp Arg Lys Ala Gly
                120                 125                 130

gac cgg gtg atg gtg ttg aac cgg tca ggg atg tgg cag gaa gag gtg   490
Asp Arg Val Met Val Leu Asn Arg Ser Gly Met Trp Gln Glu Glu Val
                135                 140                 145

act gtg ccc tcg gtc cag acc ttc ctg att cct gag gcc atg acc ttt   538
Thr Val Pro Ser Val Gln Thr Phe Leu Ile Pro Glu Ala Met Thr Phe
                150                 155                 160

gag gaa gct gct gcc ttg ctc gtc aat tac att aca gcc tac atg gtc   586
Glu Glu Ala Ala Ala Leu Leu Val Asn Tyr Ile Thr Ala Tyr Met Val
                165                 170                 175

ctc ttt gac ttc ggc aac cta cag cct ggc cac agc gtc ttg gta cac   634
```

63

```
Leu Phe Asp Phe Gly Asn Leu Gln Pro Gly His Ser Val Leu Val His
180                 185                 190                 195

atg gct gca ggg ggt gtg ggt atg gct gcc gtg cag ctg tgc cgt aca   682
Met Ala Ala Gly Gly Val Gly Met Ala Ala Val Gln Leu Cys Arg Thr
                200                 205                 210

gtg gag aat gtg aca gtg ttc gga acg gcc tcg gcc agc aag cac gag   730
Val Glu Asn Val Thr Val Phe Gly Thr Ala Ser Ala Ser Lys His Glu
                215                 220                 225

gca ctg aag gag aat ggg gtc aca cat ccc atc gac tat cac acg act   778
Ala Leu Lys Glu Asn Gly Val Thr His Pro Ile Asp Tyr His Thr Thr
                230                 235                 240

gac tac gtg gat gag atc aag aag att tcc cct aaa gga gtg gac att   826
Asp Tyr Val Asp Glu Ile Lys Lys Ile Ser Pro Lys Gly Val Asp Ile
                245                 250                 255

gtc atg gac cct ctg ggt ggg tca gat act gcc aag ggc tac aac ctc   874
Val Met Asp Pro Leu Gly Gly Ser Asp Thr Ala Lys Gly Tyr Asn Leu
260                 265                 270                 275

ctg aaa ccc atg ggc aaa gtc gtc acc tat gga atg gcc aac ctg ctg   922
Leu Lys Pro Met Gly Lys Val Val Thr Tyr Gly Met Ala Asn Leu Leu
                280                 285                 290

acg ggc ccc aaa cgg aac ctg atg gcc ctg gcc cgg aca tgg tgg aat   970
Thr Gly Pro Lys Arg Asn Leu Met Ala Leu Ala Arg Thr Trp Trp Asn
                295                 300                 305

cag ttc agc gtg aca gct ctg cag ctg ctg cag gcc aac cgg gct gtg   1018
Gln Phe Ser Val Thr Ala Leu Gln Leu Leu Gln Ala Asn Arg Ala Val
                310                 315                 320

tgt ggc ttc cac ctg ggc tac ctg gat ggt gag gtg gag ctg gtc agt   1066
Cys Gly Phe His Leu Gly Tyr Leu Asp Gly Glu Val Glu Leu Val Ser
                325                 330                 335

ggt gtg gtg gcc cgc ctc ctg gct ctg tac aac cag ggc cac atc aag   1114
Gly Val Val Ala Arg Leu Leu Ala Leu Tyr Asn Gln Gly His Ile Lys
340                 345                 350                 355

ccc cac att gac tca gtc tgg ccc ttc gag aag gtg gct gat gcc atg   1162
Pro His Ile Asp Ser Val Trp Pro Phe Glu Lys Val Ala Asp Ala Met
                360                 365                 370

aaa cag atg cag gag aag aag aat gtg ggc aag gtc ctc ctg gtt cca   1210
Lys Gln Met Gln Glu Lys Lys Asn Val Gly Lys Val Leu Leu Val Pro
                375                 380                 385

ggg cca gag aag gag aac tagggcaagt ggctgtgaga ccctagagac           1258
Gly Pro Glu Lys Glu Asn
                390


cagcgaaggg agaagttggg aagctacgtt ctgttggcca ccagacttgc atttcagcct  1318
```

64

```
ctgtcataat gctctgccct ccctcccccg aagttctctg tggtgatgac cgctctcccc 1378

tgcccctccc cgcttcctga cctctgaaga ggttgggaag tgaccatttg gatgtctggg 1438

ccctgccaag gcgacaggga gggtcagagg gaggccggct gcttcctgcc cccacccttt 1498

ccccgggcct gctgtgctgc ttttgtgcca aggttagcca gtccccccctg ttgtgttcca 1558

tgtgctttca cctctgcctc atctttcctc ccgtccctgc cccgccacct ccccaaagaa 1618

ttgaaacgtc agctcaggat atggggccaa tctctgtgag tccagcatgt acctgtctct 1678

ccctagtgtc ccttcagcct gggctgacca gtgcccgcct ctgggcttga ccagttccca 1738

atctcgtcct ctgtccccaa cttcttaagc acaattgggc ttcttccatc tccaggtttt 1798

ctgccattct taaccaaggc agccccaagc ctcctgggga ggcagggcaa aaacaggtgc 1858

cctcatcgtg gtctgtgcca tgtcccgtct ctatggtggt tgaggagaaa ggcggggaag 1918

cttcctcagc cttgcagata tgtgtggcat ttactagcca gagctctgaa aggcagtgct 1978

gtctgtttct tgtactggga ccaaagtaaa aatccaagca cattcccctt gcagttaggg 2038

gaggccctac tgccttctca aagcagagag gcagcttatc aaactcagcc caaaactctg 2098

tttacatggg tggggagatg gagcaggaa gtacagagtg ggatggtcag gacctgggcc 2158

attgcaacca aaatggggac ttcctgggta gggaggtcac tccctctact cactgagcta 2218

ggattaggga gggttattgc cccaaccatt gcaatgggag gtggagggac aggctcagcc 2278

tcctcattgt ctaaatgagg cctaaatgtg tgaagtgcga tttctgcttt tgtgtacccc 2338

accaccccat taccacagct gcctttgtgt gtttgtgtca ataaaaagcc aaaccctg 2396
```

<210> 45
<211> 393
<212> PRT
<213> Homo sapiens

<400> 45

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Met Ser Asp Glu Arg Glu Val Ala Glu Ala Ala Thr Gly Glu Asp Ala
  1               5                  10                  15

Ser Ser Pro Pro Pro Lys Thr Glu Ala Ala Ser Asp Pro Gln His Pro
             20                  25                  30

Ala Ala Ser Glu Gly Ala Ala Ala Ala Ala Ala Ser Pro Pro Leu Leu
          35                  40                  45

Arg Cys Leu Val Leu Thr Gly Phe Gly Gly Tyr Asp Lys Val Lys Leu
       50                  55                  60

Gln Ser Arg Pro Ala Ala Pro Pro Ala Pro Gly Pro Gly Gln Leu Thr
  65                  70                  75                  80
```

65

```
Leu Arg Leu Arg Ala Cys Gly Leu Asn Phe Ala Asp Leu Met Ala Arg
            85                  90              95

Gln Gly Leu Tyr Asp Arg Leu Pro Pro Leu Pro Val Thr Pro Gly Met
            100             105             110

Glu Gly Ala Gly Val Val Ile Ala Val Gly Glu Gly Val Ser Asp Arg
            115             120             125

Lys Ala Gly Asp Arg Val Met Val Leu Asn Arg Ser Gly Met Trp Gln
    130             135             140

Glu Glu Val Thr Val Pro Ser Val Gln Thr Phe Leu Ile Pro Glu Ala
145             150             155             160

Met Thr Phe Glu Glu Ala Ala Ala Leu Leu Val Asn Tyr Ile Thr Ala
            165             170             175

Tyr Met Val Leu Phe Asp Phe Gly Asn Leu Gln Pro Gly His Ser Val
            180             185             190

Leu Val His Met Ala Ala Gly Gly Val Gly Met Ala Ala Val Gln Leu
            195             200             205

Cys Arg Thr Val Glu Asn Val Thr Val Phe Gly Thr Ala Ser Ala Ser
    210             215             220

Lys His Glu Ala Leu Lys Glu Asn Gly Val Thr His Pro Ile Asp Tyr
225             230             235             240

His Thr Thr Asp Tyr Val Asp Glu Ile Lys Lys Ile Ser Pro Lys Gly
            245             250             255

Val Asp Ile Val Met Asp Pro Leu Gly Gly Ser Asp Thr Ala Lys Gly
            260             265             270

Tyr Asn Leu Leu Lys Pro Met Gly Lys Val Val Thr Tyr Gly Met Ala
            275             280             285

Asn Leu Leu Thr Gly Pro Lys Arg Asn Leu Met Ala Leu Ala Arg Thr
    290             295             300

Trp Trp Asn Gln Phe Ser Val Thr Ala Leu Gln Leu Leu Gln Ala Asn
305             310             315             320

Arg Ala Val Cys Gly Phe His Leu Gly Tyr Leu Asp Gly Glu Val Glu
            325             330             335

Leu Val Ser Gly Val Val Ala Arg Leu Leu Ala Leu Tyr Asn Gln Gly
            340             345             350

His Ile Lys Pro His Ile Asp Ser Val Trp Pro Phe Glu Lys Val Ala
            355             360             365

Asp Ala Met Lys Gln Met Gln Glu Lys Lys Asn Val Gly Lys Val Leu
    370             375             380
```

66

Leu Val Pro Gly Pro Glu Lys Gln Asn
385   390

<210> 46
<211> 2396
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (50)..(1228)

<400> 46
agctgtgcac tctccatcca gctgtgcgct ctcgtcggga gtcccagcc atg tcc gac   58
                                                       Met Ser Asp
                                                        1

gag aga gag gta gcc gag gca gcg acc ggg gaa gac gcc tct tcg ccg   106
Glu Arg Glu Val Ala Glu Ala Ala Thr Gly Glu Asp Ala Ser Ser Pro
        5   10   15

cct ccg aaa acc gag gca gcg agc gac ccc cag cat ccc gcg gcc tcc   154
Pro Pro Lys Thr Glu Ala Ala Ser Asp Pro Gln His Pro Ala Ala Ser
 20   25   30   35

gaa ggg gcc gcc gcc gcc gcc gcc tcg ccg cca ctg ctg cgc tgc cta   202
Glu Gly Ala Ala Ala Ala Ala Ala Ser Pro Pro Leu Leu Arg Cys Leu
                40   45   50

gtg ctc acc ggc ttt gga ggc tac gac aag gtg aag ctg cag agc cgg   250
Val Leu Thr Gly Phe Gly Gly Tyr Asp Lys Val Lys Leu Gln Ser Arg
                55   60   65

ccg gca gcg ccc ccg gcc cct ggg ccc ggc cag ctg acg ctg cgt ctg   298
Pro Ala Ala Pro Pro Ala Pro Gly Pro Gly Gln Leu Thr Leu Arg Leu
                70   75   80

cgg gcc tgc ggg ctc aac ttc gca gac ctc atg gct agg cag ggg ctg   346
Arg Ala Cys Gly Leu Asn Phe Ala Asp Leu Met Ala Arg Gln Gly Leu
 85   90   95

tac gac cgt ctc ccg cct ctg cct gtc act ccg ggc atg gag ggc gcg   394
Tyr Asp Arg Leu Pro Pro Leu Pro Val Thr Pro Gly Met Glu Gly Ala
100   105   110   115

ggt gtt gtg atc gca gtg ggc gag gga gtc agc gac cgc aag gca gga   442
Gly Val Val Ile Ala Val Gly Glu Gly Val Ser Asp Arg Lys Ala Gly
                120   125   130

gac cgg gtg atg gtg ttg aac cgg tca ggg atg tgg cag gaa gag gtg   490
Asp Arg Val Met Val Leu Asn Arg Ser Gly Met Trp Gln Glu Glu Val
                135   140   145

act gtg ccc tcg gtc cag acc ttc ctg att cct gag gcc atg acc ttt   538
Thr Val Pro Ser Val Gln Thr Phe Leu Ile Pro Glu Ala Met Thr Phe

67

```
                150                      155                      160

gag gaa gct gct gcc ttg ctc gtc aat tac att aca gcc tac atg gtc        586
Glu Glu Ala Ala Ala Leu Leu Val Asn Tyr Ile Thr Ala Tyr Met Val
    165                  170                  175

ctc ttt gac ttc ggc aac cta cag cct ggc cac agc gtc ttg gta cac        634
Leu Phe Asp Phe Gly Asn Leu Gln Pro Gly His Ser Val Leu Val His
180                  185                  190                  195

atg gct gca ggg ggt gtg ggt atg gct gcc gtg cag ctg tgc cgt aca        682
Met Ala Ala Gly Gly Val Gly Met Ala Ala Val Gln Leu Cys Arg Thr
                200                  205                  210

gtg gag aat gtg aca gtg ttc gga acg gcc tcg gcc agc aag cac gag        730
Val Glu Asn Val Thr Val Phe Gly Thr Ala Ser Ala Ser Lys His Glu
                215                  220                  225

gca ctg aag gag aat ggg gtc aca cat ccc atc gac tat cac acg act        778
Ala Leu Lys Glu Asn Gly Val Thr His Pro Ile Asp Tyr His Thr Thr
            230                  235                  240

gac tac gtg gat gag atc aag aag att tcc cct aaa gga gtg gac att        826
Asp Tyr Val Asp Glu Ile Lys Lys Ile Ser Pro Lys Gly Val Asp Ile
        245                  250                  255

gtc atg gac cct ctg ggt ggg tca gat act gcc aag ggc tac aac ctc        874
Val Met Asp Pro Leu Gly Gly Ser Asp Thr Ala Lys Gly Tyr Asn Leu
260                  265                  270                  275

ctg aaa ccc atg ggc aaa gtc gtc acc tat gga atg gcc aac ctg ctg        922
Leu Lys Pro Met Gly Lys Val Val Thr Tyr Gly Met Ala Asn Leu Leu
                280                  285                  290

acg ggc ccc aaa cgg aac ctg atg gcc ctg gcc cgg aca tgg tgg aat        970
Thr Gly Pro Lys Arg Asn Leu Met Ala Leu Ala Arg Thr Trp Trp Asn
                295                  300                  305

cag ttc agc gtg aca gct ctg cag ctg ctg cag gcc aac cgg gct gtg       1018
Gln Phe Ser Val Thr Ala Leu Gln Leu Leu Gln Ala Asn Arg Ala Val
                310                  315                  320

tgt ggc ttc cac ctg ggc tac ctg gat ggt gag gtg gag ctg gtc agt       1066
Cys Gly Phe His Leu Gly Tyr Leu Asp Gly Glu Val Glu Leu Val Ser
                325                  330                  335

ggt gtg gtg gcc cgc ctc ctg gct ctg tac aac cag ggc cac atc aag       1114
Gly Val Val Ala Arg Leu Leu Ala Leu Tyr Asn Gln Gly His Ile Lys
340                  345                  350                  355

ccc cac att gac tca gtc tgg ccc ttc gag aag gtg gct gat gcc atg       1162
Pro His Ile Asp Ser Val Trp Pro Phe Glu Lys Val Ala Asp Ala Met
                360                  365                  370

aaa cag atg cag gag aag aag aat gtg ggc aag gtc ctc ctg gtt cca       1210
Lys Gln Met Gln Glu Lys Lys Asn Val Gly Lys Val Leu Leu Val Pro
                375                  380                  385
```

68

```
ggg cca gag aag cag aac tagggcaagt ggctgtgaga ccctagagac          1258
Gly Pro Glu Lys Gln Asn
        390

cagcgaaggg agaagttggg aagctacgtt ctgttggcca ccagacttgc atttcagcct   1318

ctgtcataat gctctgccct ccctcccccg aagttctctg tggtgatgac cgctctcccc   1378

tgcccctccc cgcttcctga cctctgaaga ggttgggaag tgaccatttg gatgtctggg   1438

ccctgccaag gcgacaggga gggtcagagg gaggccggct gcttcctgcc cccacccttt   1498

ccccgggcct gctgtgctgc ttttgtgcca aggttagcca gtcccccctg ttgtgttcca   1558

tgtgctttca cctctgcctc atctttcctc ccgtccctgc cccgccacct ccccaaagaa   1618

ttgaaacgtc agctcaggat atggggccaa tctctgtgag tccagcatgt acctgtctct   1678

ccctagtgtc ccttcagcct gggctgacca gtgcccgcct ctgggcttga ccagttccca   1738

atctcgtcct ctgtccccaa cttcttaagc acaattgggc ttcttccatc tccaggtttt   1798

ctgccattct taaccaaggc agccccaagc ctcctgggga ggcagggcaa aaacaggtgc   1858

cctcatcgtg gtctgtgcca tgtcccgtct ctatggtggt tgaggagaaa ggcggggaag   1918

cttcctcagc cttgcagata tgtgtggcat ttactagcca gagctctgaa aggcagtgct   1978

gtctgtttct tgtactggga ccaaagtaaa aatccaagca cattcccctt gcagttaggg   2038

gaggccctac tgccttctca aagcagagag gcagcttatc aaactcagcc caaaactctg   2098

tttacatggg tggggagatg gagcagggaa gtacagagtg ggatggtcag gacctgggcc   2158

attgcaacca aaatggggac ttcctgggta gggaggtcac tccctctact cactgagcta   2218

ggattaggga gggttattgc cccaaccatt gcaatgggag gtggagggac aggctcagcc   2278

tcctcattgt ctaaatgagg cctaaatgtg tgaagtgcga tttctgcttt tgtgtacccc   2338

accaccccat taccacagct gcctttgtgt gtttgtgtca ataaaaagcc aaaccctg    2396
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<210> 47
<211> 138
<212> PRT
<213> Homo sapiens

<400> 47
Met Ile Ser Leu Thr Asp Thr Gln Lys Ile Gly Met Gly Leu Thr Gly
 1               5                  10                  15

Phe Gly Val Phe Phe Leu Phe Phe Gly Met Ile Leu Phe Phe Asp Lys
            20                  25                  30

Ala Leu Leu Ala Ile Gly Asn Val Leu Phe Val Ala Gly Leu Ala Phe
```

69

```
               35                     40                      45
Val Ile Gly Leu Glu Arg Thr Phe Arg Phe Phe Phe Gln Lys His Lys
     50                     55                     60

Met Lys Ala Thr Gly Phe Phe Leu Gly Gly Val Phe Val Val Leu Ile
 65                     70                     75                     80

Gly Trp Pro Leu Ile Gly Met Ile Phe Glu Ile Tyr Gly Phe Phe Leu
                    85                     90                     95

Leu Phe Arg Gly Phe Phe Pro Val Val Val Gly Phe Ile Arg Arg Val
                   100                    105                    110

Pro Val Leu Gly Ser Leu Leu Asn Leu Pro Gly Ile Arg Ser Phe Val
                   115                    120                    125

Asp Lys Val Gly Glu Ser Asn Asn Met Val
    130                    135
```

```
<210> 48
<211> 2976
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (110)..(523)

<400> 48
agacgtggcg gctctcgcct gggctgtttc ccggcttcat ttctcccgac tcagcttccc 60

accctgggct ttccgaggtg ctgtcgccgc tgtccccacc actgcagcc atg atc tcc 118
                                                      Met Ile Ser
                                                        1

tta acg gac acg cag aaa att gga atg gga tta aca gga ttt gga gtg    166
Leu Thr Asp Thr Gln Lys Ile Gly Met Gly Leu Thr Gly Phe Gly Val
     5                   10                  15

ttt ttc ctg ttc ttt gga atg att ctc ttt ttt gac aaa gca cta ctg    214
Phe Phe Leu Phe Phe Gly Met Ile Leu Phe Phe Asp Lys Ala Leu Leu
 20                  25                  30                  35

gct att gga aat gtt tta ttt gta gcc ggc ttg gct ttt gta att ggt    262
Ala Ile Gly Asn Val Leu Phe Val Ala Gly Leu Ala Phe Val Ile Gly
                40                  45                  50

tta gaa aga aca ttc aga ttc ttc ttc caa aaa cat aaa atg aaa gct    310
Leu Glu Arg Thr Phe Arg Phe Phe Phe Gln Lys His Lys Met Lys Ala
                55                  60                  65

aca ggt ttt ttt ctg ggt ggt gta ttt gta gtc ctt att ggt tgg cct    358
Thr Gly Phe Phe Leu Gly Gly Val Phe Val Val Leu Ile Gly Trp Pro
        70                  75                  80
```

70

```
ttg ata ggc atg atc ttc gaa att tat gga ttt ttt ctc ttg ttc agg    406
Leu Ile Gly Met Ile Phe Glu Ile Tyr Gly Phe Phe Leu Leu Phe Arg
         85                  90                  95

ggc ttc ttt cct gtc gtt gtt ggc ttt att aga aga gtg cca gtc ctt    454
Gly Phe Phe Pro Val Val Val Gly Phe Ile Arg Arg Val Pro Val Leu
100                 105                 110                 115

gga tcc ctc cta aat tta cct gga att aga tca ttt gta gat aaa gtt    502
Gly Ser Leu Leu Asn Leu Pro Gly Ile Arg Ser Phe Val Asp Lys Val
                120                 125                 130

gga gaa agc aac aat atg gta taacaacaag tgaatttgaa gactcattta       553
Gly Glu Ser Asn Asn Met Val
                135
```

```
aaatattgtg ttatttataa agtcatttga agaatattca gcacaaaatt aaattacatg 613

aaatagcttg taatgttctt tacaggagtt taaaacgtat agcctacaaa gtaccagcag 673

caaattagca aagaagcagt gaaaacaggc ttctactcaa gtgaactaag aagaagtcag 733

caagcaaact gagagaggtg aaatccatgt taatgatgct taagaaactc ttgaaggcta 793

tttgtgttgt ttttccacaa tgtgcgaaac tcagccatcc ttagagaact gtggtgcctg 853

tttcttttct ttttattttg aaggctcagg agcatccata ggcatttgct ttttagaaat 913

gtccactgca atggcaaaaa tatttccagt tgcactgtat ctctggaagt gatgcatgaa 973

ttcgattgga ttgtgtcatt ttaaagtatt aaaaccaagg aaaccccaat tttgatgtat 1033

ggattacttt tttttgtaaa catggttaaa ataaaacttc tgtggttctt ctgaatctta 1093

atatttcaaa gccaggtgaa aatctgaact agatattctt tgttggaata tgcaaaggtc 1153

attctttact aacttttagt tactaaatta tagctaagtt ttgtcagcag catactccgg 1213

aaagtctcat acttcttggg agtctgccct cctaagtatc tgtctatatc attcattacg 1273

tgtaagtatt taacaaaaaa gcattcttga ccatgaatga agtagtttgt ttcatagctt 1333

gtctcattga atagtattat tgaagatact aaatgatgca aaccaaatgg attttttcca 1393

tgtcatgatg taattttttct ttcttctttc ttttttttaa attttagcag tggcttatta 1453

tttgtttttc ataaattaaa ataacttttg ataatgttta ctttaagaca tgtaacatgt 1513

taaaaggtta aacttatggc tgttttttaaa gggctattca tttaatctga gttttccctt 1573

atttttcagct ttttcctagc atataatagt cattaagcat gacatatcct tcatatgatc 1633

actcatcttg agttaattag aaaataccctg agttcacgtg ctaaagtcat ttcactgtaa 1693

taaactgact atggtttctt aagaacatga cactaaaaaa aaagtggttt ttttccaccg 1753

ttgctgatta ttagacagta ggaaatagct gttttctttta gttttacaag atgtgacagc 1813
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71

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tttagtggta gatgtaggga aacatttcaa cagccatagt actatttgtt ttaccactga 1873

ttgcactgtt ttgttttttt aacagttgca aagcttttta atgcataaaa gtataattga 1933

aatctgtggt atttatttac aaacatgtct acaaaaatag attacagctt attttatttt 1993

tagttaaatc tcttaataca cagagaactc ccaatcttgc tcatctaaat aaggaaagac 2053

ttggtgtata gtgtgatggt ttagtcttaa ggattaagac attttggta cttgcatttg 2113

acttacgatg tatctgtgaa aatgggatga tattgacaaa tggagactcc tacctcaata 2173

gttaatggaa taataagagg ctactgttgt gtctaatgtt cttcaaaaaa gtaatatcct 2233

cacttggaga gtgtcaaata catactttga ggattgactt tatataaggt gccctgtaga 2293

actctgttac acatatttt gacccatatt atttacaatg tcttgataat tctacctttt 2353

tagagcaaga atagtatctg ctaatgtaag ggacatctgt atttaactcc tttgtagaca 2413

tgaatttcta tcaaaatgtt ctttgcactg taacagagat tccttttttc aataatctta 2473

attcaaaagc attattagac ttgaaagggt ttgataatct cccagtcctt agtaaagatt 2533

gagagaggct ggagcagttt tcagttttaa atgagtctgc agttaatatc aaatgtgagt 2593

ttgggactgc ctggcaacat ttatatttct tattcagaac ccttgatgag actatttta 2653

aacatactag tctgctgata gaaagcacta tacatcctat tgtttctttc tttccaaaat 2713

cagccttctg tctgtaacaa aaatgtactt tatagagatg gaggaaaagg tctaatacta 2773

catagcctta agtgtttctg tcattgttca agtgtatttt ctgtaacaga aacatatttg 2833

gaatgttttt cttttcccct tataaattgt aattcctgaa atactgctgc tttaaaaagt 2893

cccactgtca gattatatta tctaacaatt gaatattgta aatatacttg tcttacctct 2953

caataaaagg gtactttct att                                          2976
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<210> 49
<211> 359
<212> PRT
<213> Homo sapiens

<400> 49

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Met Ser Lys Glu Thr Ile Ile Lys Cys Glu Lys Gln Lys Pro Arg Phe
 1               5                  10                  15

His Ala Phe Leu Lys Ile Asn Gln Ala Lys Pro Glu Cys Gly Arg Gln
            20                  25                  30

Ser Leu Val Glu Leu Leu Ile Arg Pro Val Gln Arg Leu Pro Ser Val
        35                  40                  45
```

72

Ala Leu Leu Leu Asn Asp Leu Lys Lys His Thr Ala Asp Glu Asn Pro
    50   55   60

Asp Lys Ser Thr Leu Glu Lys Ala Ile Gly Ser Leu Lys Glu Val Met
65   70   75   80

Thr His Ile Asn Glu Asp Lys Arg Lys Thr Glu Ala Gln Lys Gln Ile
            85   90   95

Phe Asp Val Val Tyr Glu Val Asp Gly Cys Pro Ala Asn Leu Leu Ser
         100   105   110

Ser His Arg Ser Leu Val Gln Arg Val Glu Thr Ile Ser Leu Gly Glu
         115   120   125

His Pro Cys Asp Arg Gly Glu Gln Val Thr Leu Phe Leu Phe Asn Asp
        130   135   140

Cys Leu Glu Ile Ala Arg Lys Arg His Lys Val Ile Gly Thr Phe Arg
145   150   155   160

Ser Pro His Gly Gln Thr Arg Pro Pro Ala Ser Leu Lys His Ile His
         165   170   175

Leu Met Pro Leu Ser Gln Ile Lys Lys Val Leu Asp Ile Arg Glu Thr
        180   185   190

Glu Asp Cys His Asn Ala Phe Ala Leu Leu Val Arg Pro Pro Thr Glu
        195   200   205

Gln Ala Asn Val Leu Leu Ser Phe Gln Met Thr Ser Asp Glu Leu Pro
    210   215   220

Lys Glu Asn Trp Leu Lys Met Leu Cys Arg His Val Ala Asn Thr Ile
225   230   235   240

Cys Lys Ala Asp Ala Glu Asn Leu Ile Tyr Thr Ala Asp Pro Glu Ser
        245   250   255

Phe Glu Val Asn Thr Lys Asp Met Asp Ser Thr Leu Ser Arg Ala Ser
        260   265   270

Arg Ala Ile Lys Lys Thr Ser Lys Lys Val Thr Arg Ala Phe Ser Phe
        275   280   285

Ser Lys Thr Pro Lys Arg Ala Leu Arg Arg Ala Leu Met Thr Ser His
    290   295   300

Gly Ser Val Glu Gly Arg Ser Pro Ser Ser Asn Asp Lys His Val Met
305   310   315   320

Ser Arg Leu Ser Ser Thr Ser Ser Leu Ala Gly Ile Pro Ser Pro Ser
         325   330   335

Leu Val Ser Leu Pro Ser Phe Phe Glu Arg Arg Ser His Thr Leu Ser
        340   345   350

```
Arg Ser Thr Thr His Leu Ile
        355
```

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<210> 50
<211> 2636
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (327)..(1403)

<400> 50
cttcaaagca gtcagcaagg tggcaagttg caaaagagct ttatcaaact gaaagtaatt 60

atgttaatat attggcaaca attattcagt tatttcaagt accattggaa gaggaaggac 120

aacgtggtgg acctatcctt gcaccagagg agattaagac tattttttggt agcatcccag 180

atatctttga tgtacacact aagataaagg atgatcttga agaccttata gttaattggg 240

atgagagcaa aagcattggt gacattttttc tgaaatattc aaaagatttg gtaaaaacct 300

accctcccttt tgtaaacttc tttgaa atg agc aag gaa aca att att aaa tgt 353
                                Met Ser Lys Glu Thr Ile Ile Lys Cys
                                 1               5
```

```
gaa aaa cag aaa cca aga ttt cat gct ttt ctc aag ata aac caa gca     401
Glu Lys Gln Lys Pro Arg Phe His Ala Phe Leu Lys Ile Asn Gln Ala
 10              15              20              25
```

```
aaa cca gaa tgt gga cgg cag agc ctt gtt gaa ctt ctt atc cga cca     449
Lys Pro Glu Cys Gly Arg Gln Ser Leu Val Glu Leu Leu Ile Arg Pro
                30              35              40
```

```
gta cag agg tta ccc agt gtt gca tta ctt tta aat gat ctt aag aag     497
Val Gln Arg Leu Pro Ser Val Ala Leu Leu Leu Asn Asp Leu Lys Lys
                45              50              55
```

```
cat aca gct gat gaa aat cca gac aaa agc act tta gaa aaa gct att     545
His Thr Ala Asp Glu Asn Pro Asp Lys Ser Thr Leu Glu Lys Ala Ile
                60              65              70
```

```
gga tca ctg aag gaa gta atg acg cat att aat gag gat aag aga aaa     593
Gly Ser Leu Lys Glu Val Met Thr His Ile Asn Glu Asp Lys Arg Lys
     75              80              85
```

```
aca gaa gct caa aag caa att ttt gat gtt gtt tat gaa gta gat gga     641
Thr Glu Ala Gln Lys Gln Ile Phe Asp Val Val Tyr Glu Val Asp Gly
 90              95              100             105
```

```
tgc cca gct aat ctt tta tct tct cac cga agc tta gta cag cgg gtt     689
Cys Pro Ala Asn Leu Leu Ser Ser His Arg Ser Leu Val Gln Arg Val
                110             115             120
```

```
gaa aca att tct cta ggt gag cac ccc tgt gac aga gga gaa caa gta     737
```

74

```
        Glu Thr Ile Ser Leu Gly Glu His Pro Cys Asp Arg Gly Glu Gln Val
                    125                 130                 135

act ctc ttc ctc ttc aat gat tgc cta gag ata gca aga aaa cgg cac          785
Thr Leu Phe Leu Phe Asn Asp Cys Leu Glu Ile Ala Arg Lys Arg His
        140                 145                 150

aag gtt att ggc act ttt agg agt cct cat ggc caa acc cga ccc cca          833
Lys Val Ile Gly Thr Phe Arg Ser Pro His Gly Gln Thr Arg Pro Pro
        155                 160                 165

gct tct ctt aag cat att cac cta atg cct ctt tct cag att aag aag          881
Ala Ser Leu Lys His Ile His Leu Met Pro Leu Ser Gln Ile Lys Lys
170                 175                 180                 185

gta ttg gac ata aga gag aca gaa gat tgc cat aat gct ttt gcc ttg          929
Val Leu Asp Ile Arg Glu Thr Glu Asp Cys His Asn Ala Phe Ala Leu
                    190                 195                 200

ctt gtg agg cca cca aca gag cag gca aat gtg cta ctc agt ttc cag          977
Leu Val Arg Pro Pro Thr Glu Gln Ala Asn Val Leu Leu Ser Phe Gln
                205                 210                 215

atg aca tca gat gaa ctt cca aaa gaa aac tgg cta aag atg ctg tgt          1025
Met Thr Ser Asp Glu Leu Pro Lys Glu Asn Trp Leu Lys Met Leu Cys
            220                 225                 230

cga cat gta gct aac acc att tgt aaa gca gat gct gag aat ctt att          1073
Arg His Val Ala Asn Thr Ile Cys Lys Ala Asp Ala Glu Asn Leu Ile
        235                 240                 245

tat act gct gat cca gaa tcc ttt gaa gta aat aca aaa gat atg gac          1121
Tyr Thr Ala Asp Pro Glu Ser Phe Glu Val Asn Thr Lys Asp Met Asp
250                 255                 260                 265

agt aca ttg agt aga gca tca aga gca ata aaa aag act tca aaa aag          1169
Ser Thr Leu Ser Arg Ala Ser Arg Ala Ile Lys Lys Thr Ser Lys Lys
                270                 275                 280

gtt aca aga gca ttc tct ttc tcc aaa act cca aaa aga gct ctt cga          1217
Val Thr Arg Ala Phe Ser Phe Ser Lys Thr Pro Lys Arg Ala Leu Arg
                285                 290                 295

agg gct ctt atg aca tcc cac ggc tca gtg gag gga aga agt cct tcc          1265
Arg Ala Leu Met Thr Ser His Gly Ser Val Glu Gly Arg Ser Pro Ser
            300                 305                 310

agc aat gat aag cat gta atg agt cgt ctt tct agc aca tca tca tta          1313
Ser Asn Asp Lys His Val Met Ser Arg Leu Ser Ser Thr Ser Ser Leu
        315                 320                 325

gca ggt atc cct tct ccc tcc ctt gtc agc ctt cct tcc ttc ttt gaa          1361
Ala Gly Ile Pro Ser Pro Ser Leu Val Ser Leu Pro Ser Phe Phe Glu
330                 335                 340                 345

agg aga agt cat acg tta agt aga tct aca act cat ttg ata                  1403
Arg Arg Ser His Thr Leu Ser Arg Ser Thr Thr His Leu Ile
```

```
                    350                      355
tgaagcgtta ccaaaatctt aaattataga aatgtataga cacctcatac tcaaataaga 1463

aactgactta aatggtactt gtaattagca cttggtgaaa gctggaagga agataaataa 1523

cactaaacta tgctatttga ttttctcttc tgaaagagta aggtttacct gttacatttt 1583

caagttaatt catgtaaaaa atgatagtga ttttgatgta atttatctct tgtttgaatc 1643

tgtcattcaa aggccaataa tttaagttgc tatcagctga tattagtagc tttgcaaccc 1703

tgatagagta aataaatttt atgggcgggt gccaaatact gctgtgaatc tatttgtata 1763

gtatccatga atgaatttat ggaaatagat atttgtgcag ctcaatttat gcagagatta 1823

aatgacatca taatactgga tgaaaacttg catagaattc tgattaaata gtgggtctgt 1883

ttcacatgtg cagtttgaag tatttaaata accactcctt tcacagttta ttttcttctc 1943

aagcgttttc aagatctagc atgtggattt taaaagattt gccctcatta acaagaataa 2003

catttaaagg agattgtttc aaaatatttt tgcaaattga dataaggaca gaaagattga 2063

gaaacattgt atattttgca aaaacaagat gtttgtagct gtttcagaga gagtacggta 2123

tatttatggt aattttatcc actagcaaat cttgatttag tttgatagtg tgtggaattt 2183

tattttgaag gataagacca tgggaaaatt gtggtaaaga ctgtttgtac ccttcatgaa 2243

ataattctga agttgccatc agtttttacta atcttctgtg aaatgcatag atatgcgcat 2303

gttcaacttt ttattgtggt cttataatta aatgtaaaat tgaaaattca tttgctgttt 2363

caaagtgtga tatctttcac aatagccttt ttatagtcag taattcagaa taatcaagtt 2423

catatggata aatgcatttt tatttcctat ttctttaggg agtgctacaa atgtttgtca 2483

cttaaatttc aagtttctgt tttaatagtt aactgactat agattgtttt ctatgccatg 2543

tatgtgccac ttctgagagt agtaaatgac tctttgctac attttaaaag caattgtatt 2603

agtaagaact ttgtaaataa atacctaaaa ccc                               2636
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<210> 51
<211> 883
<212> PRT
<213> Homo sapiens

<400> 51
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Met Ala Glu Asn Ser Val Leu Thr Ser Thr Thr Gly Arg Thr Ser Leu
 1               5                  10                  15

Ala Asp Ser Ser Ile Phe Asp Ser Lys Val Thr Glu Ile Ser Lys Glu
            20                  25                  30
```

76

```
Asn Leu Leu Ile Gly Ser Thr Ser Tyr Val Glu Glu Glu Met Pro Gln
        35              40              45

Ile Glu Thr Arg Val Ile Leu Val Gln Glu Ala Gly Lys Gln Glu Glu
        50              55              60

Leu Thr Lys Ala Leu Lys Asp Ile Lys Val Gly Phe Val Lys Met Glu
65              70              75              80

Ser Val Glu Glu Phe Glu Gly Leu Asp Ser Pro Glu Phe Glu Asn Val
                85              90              95

Phe Val Val Thr Asp Phe Gln Asp Ser Val Phe Asn Asp Leu Tyr Lys
            100             105             110

Ala Asp Cys Arg Val Ile Gly Pro Pro Val Val Leu Asn Cys Ser Gln
        115             120             125

Lys Gly Glu Pro Leu Pro Phe Ser Cys Arg Pro Leu Tyr Cys Thr Ser
    130             135             140

Met Met Asn Leu Val Leu Cys Phe Thr Gly Phe Arg Lys Lys Glu Glu
145             150             155             160

Leu Val Arg Leu Val Thr Leu Val His His Met Gly Gly Val Ile Arg
            165             170             175

Lys Asp Phe Asn Ser Lys Val Thr His Leu Val Ala Asn Cys Thr Gln
            180             185             190

Gly Glu Lys Phe Arg Val Ala Val Ser Leu Gly Thr Pro Ile Met Lys
        195             200             205

Pro Glu Trp Ile Tyr Lys Ala Trp Glu Arg Arg Asn Glu Gln Asp Phe
    210             215             220

Tyr Ala Ala Val Asp Asp Phe Arg Asn Glu Phe Lys Val Pro Pro Phe
225             230             235             240

Gln Asp Cys Ile Phe Ser Phe Leu Gly Phe Ser Asp Glu Glu Lys Thr
            245             250             255

Asn Met Glu Glu Met Thr Glu Met Gln Gly Gly Lys Tyr Leu Pro Leu
        260             265             270

Gly Asp Glu Arg Cys Thr His Leu Val Val Glu Glu Asn Ile Val Lys
        275             280             285

Asp Leu Pro Phe Glu Pro Ser Lys Lys Leu Tyr Val Val Lys Gln Glu
    290             295             300

Trp Phe Trp Gly Ser Ile Gln Met Asp Ala Arg Ala Gly Glu Thr Met
305             310             315             320

Tyr Leu Tyr Glu Lys Ala Asn Thr Pro Glu Leu Lys Lys Ser Val Ser
            325             330             335
```

77

```
Met Leu Ser Leu Asn Thr Pro Asn Ser Asn Arg Lys Arg Arg Arg Leu
        340             345             350

Lys Glu Thr Leu Ala Gln Leu Ser Arg Asp Thr Asp Val Ser Pro Phe
        355             360             365

Pro Pro Arg Lys Arg Pro Ser Ala Glu His Ser Leu Ser Ile Gly Ser
    370             375             380

Leu Leu Asp Ile Ser Asn Thr Pro Glu Ser Ser Ile Asn Tyr Gly Asp
385             390             395             400

Thr Pro Lys Ser Cys Thr Lys Ser Ser Lys Ser Ser Thr Pro Val Pro
            405             410             415

Ser Lys Gln Ser Ala Arg Trp Gln Val Ala Lys Glu Leu Tyr Gln Thr
        420             425             430

Glu Ser Asn Tyr Val Asn Ile Leu Ala Thr Ile Ile Gln Leu Phe Gln
        435             440             445

Val Pro Leu Glu Glu Glu Gly Gln Arg Gly Gly Pro Ile Leu Ala Pro
    450             455             460

Glu Glu Ile Lys Thr Ile Phe Gly Ser Ile Pro Asp Ile Phe Asp Val
465             470             475             480

His Thr Lys Ile Lys Asp Asp Leu Glu Asp Leu Ile Val Asn Trp Asp
            485             490             495

Glu Ser Lys Ser Ile Gly Asp Ile Phe Leu Lys Tyr Ser Lys Asp Leu
        500             505             510

Val Lys Thr Tyr Pro Pro Phe Val Asn Phe Phe Glu Met Ser Lys Glu
        515             520             525

Thr Ile Ile Lys Cys Glu Lys Gln Lys Pro Arg Phe His Ala Phe Leu
    530             535             540

Lys Ile Asn Gln Ala Lys Pro Glu Cys Gly Arg Gln Ser Leu Val Glu
545             550             555             560

Leu Leu Ile Arg Pro Val Gln Arg Leu Pro Ser Val Ala Leu Leu Leu
            565             570             575

Asn Asp Leu Lys Lys His Thr Ala Asp Glu Asn Pro Asp Lys Ser Thr
            580             585             590

Leu Glu Lys Ala Ile Gly Ser Leu Lys Glu Val Met Thr His Ile Asn
        595             600             605

Glu Asp Lys Arg Lys Thr Glu Ala Gln Lys Gln Ile Phe Asp Val Val
    610             615             620

Tyr Glu Val Asp Gly Cys Pro Ala Asn Leu Leu Ser Ser His Arg Ser
625             630             635             640
```

78

```
Leu Val Gln Arg Val Glu Thr Ile Ser Leu Gly Glu His Pro Cys Asp
            645             650                 655

Arg Gly Glu Gln Val Thr Leu Phe Leu Phe Asn Asp Cys Leu Glu Ile
            660             665                 670

Ala Arg Lys Arg His Lys Val Ile Gly Thr Phe Arg Ser Pro His Gly
            675             680                 685

Gln Thr Arg Pro Pro Ala Ser Leu Lys His Ile His Leu Met Pro Leu
    690             695             700

Ser Gln Ile Lys Lys Val Leu Asp Ile Arg Glu Thr Glu Asp Cys His
705             710             715                 720

Asn Ala Phe Ala Leu Leu Val Arg Pro Pro Thr Glu Gln Ala Asn Val
            725             730                 735

Leu Leu Ser Phe Gln Met Thr Ser Asp Glu Leu Pro Lys Glu Asn Trp
            740             745                 750

Leu Lys Met Leu Cys Arg His Val Ala Asn Thr Ile Cys Lys Ala Asp
            755             760                 765

Ala Glu Asn Leu Ile Tyr Thr Ala Asp Pro Glu Ser Phe Glu Val Asn
    770             775             780

Thr Lys Asp Met Asp Ser Thr Leu Ser Arg Ala Ser Arg Ala Ile Lys
785             790             795                 800

Lys Thr Ser Lys Lys Val Thr Arg Ala Phe Ser Phe Ser Lys Thr Pro
            805             810                 815

Lys Arg Ala Leu Arg Arg Ala Leu Met Thr Ser His Gly Ser Val Glu
            820             825             830

Gly Arg Ser Pro Ser Ser Asn Asp Lys His Val Met Ser Arg Leu Ser
            835             840             845

Ser Thr Ser Ser Leu Ala Gly Ile Pro Ser Pro Ser Leu Val Ser Leu
    850             855             860

Pro Ser Phe Phe Glu Arg Arg Ser His Thr Leu Ser Arg Ser Thr Thr
865             870             875                 880

His Leu Ile
```

<400> 52

```
agagtgctga tttagaagaa tacaaatc atg gct gaa aat agt gta tta aca      52
                                  Met Ala Glu Asn Ser Val Leu Thr
                                   1               5
```

```
tcc act act ggg agg act agc ttg gca gac tct tcc att ttt gat tct    100
Ser Thr Thr Gly Arg Thr Ser Leu Ala Asp Ser Ser Ile Phe Asp Ser
     10                  15                  20
```

```
aaa gtt act gag att tcc aag gaa aac tta ctt att gga tct act tca    148
Lys Val Thr Glu Ile Ser Lys Glu Asn Leu Leu Ile Gly Ser Thr Ser
 25                  30                  35                  40
```

```
tat gta gaa gaa gag atg cct cag att gaa aca aga gtg ata ttg gtt    196
Tyr Val Glu Glu Glu Met Pro Gln Ile Glu Thr Arg Val Ile Leu Val
                     45                  50                  55
```

```
caa gaa gct gga aaa caa gaa gaa ctt aca aaa gcc tta aag gac att    244
Gln Glu Ala Gly Lys Gln Glu Glu Leu Thr Lys Ala Leu Lys Asp Ile
                 60                  65                  70
```

```
aaa gtg ggc ttt gta aag atg gag tca gtg gaa gaa ttt gaa ggt ttg    292
Lys Val Gly Phe Val Lys Met Glu Ser Val Glu Glu Phe Glu Gly Leu
             75                  80                  85
```

```
gat tct ccg gaa ttt gaa aat gta ttt gta gtc acg gac ttt cag gat    340
Asp Ser Pro Glu Phe Glu Asn Val Phe Val Val Thr Asp Phe Gln Asp
         90                  95                 100
```

```
tct gtc ttt aat gac ctc tac aag gct gat tgt aga gtt att gga cca    388
Ser Val Phe Asn Asp Leu Tyr Lys Ala Asp Cys Arg Val Ile Gly Pro
105                 110                 115                 120
```

```
cca gtt gta tta aat tgt tca caa aaa gga gag cct ttg cca ttt tca    436
Pro Val Val Leu Asn Cys Ser Gln Lys Gly Glu Pro Leu Pro Phe Ser
                125                 130                 135
```

```
tgt cgc ccg ttg tat tgt aca agt atg atg aat cta gta cta tgc ttt    484
Cys Arg Pro Leu Tyr Cys Thr Ser Met Met Asn Leu Val Leu Cys Phe
                140                 145                 150
```

```
act gga ttt agg aaa aaa gaa gaa cta gtc agg ttg gtg aca ttg gtc    532
Thr Gly Phe Arg Lys Lys Glu Glu Leu Val Arg Leu Val Thr Leu Val
         155                 160                 165
```

```
cat cac atg ggt gga gtt att cga aaa gac ttt aat tca aaa gtt aca    580
His His Met Gly Gly Val Ile Arg Lys Asp Phe Asn Ser Lys Val Thr
    170                 175                 180
```

```
cat ttg gtg gca aat tgt aca caa gga gaa aaa ttc agg gtt gct gtg    628
His Leu Val Ala Asn Cys Thr Gln Gly Glu Lys Phe Arg Val Ala Val
185                 190                 195                 200
```

```
agt cta ggt act cca att atg aag cca gaa tgg att tat aaa gct tgg    676
Ser Leu Gly Thr Pro Ile Met Lys Pro Glu Trp Ile Tyr Lys Ala Trp
                205                 210                 215
```

80

```
gaa agg cgg aat gaa cag gat ttc tat gca gca gtt gat gac ttt aga       724
Glu Arg Arg Asn Glu Gln Asp Phe Tyr Ala Ala Val Asp Asp Phe Arg
            220             225                 230

aat gaa ttt aaa gtt cct cca ttt caa gat tgt att ttt agt ttc ctg       772
Asn Glu Phe Lys Val Pro Pro Phe Gln Asp Cys Ile Phe Ser Phe Leu
            235             240                 245

gga ttt tca gat gaa gag aaa acc aat atg gaa gaa atg act gaa atg       820
Gly Phe Ser Asp Glu Glu Lys Thr Asn Met Glu Glu Met Thr Glu Met
            250             255                 260

caa gga ggt aaa tat tta ccg ctt gga gat gaa aga tgc act cac ctt       868
Gln Gly Gly Lys Tyr Leu Pro Leu Gly Asp Glu Arg Cys Thr His Leu
265             270                 275                 280

gta gtt gaa gag aat ata gta aaa gat ctt ccc ttt gaa cct tca aag       916
Val Val Glu Glu Asn Ile Val Lys Asp Leu Pro Phe Glu Pro Ser Lys
                285             290                 295

aaa ctt tat gtt gtc aag caa gag tgg ttc tgg gga agc att caa atg       964
Lys Leu Tyr Val Val Lys Gln Glu Trp Phe Trp Gly Ser Ile Gln Met
            300             305                 310

gat gcc cga gct gga gaa act atg tat tta tat gaa aag gca aat act      1012
Asp Ala Arg Ala Gly Glu Thr Met Tyr Leu Tyr Glu Lys Ala Asn Thr
            315             320                 325

cct gag ctc aag aaa tca gtg tca atg ctt tct cta aat acc cct aac      1060
Pro Glu Leu Lys Lys Ser Val Ser Met Leu Ser Leu Asn Thr Pro Asn
            330             335                 340

agc aat cgc aaa cga cgt cgt tta aaa gaa aca ctt gct cag ctt tca      1108
Ser Asn Arg Lys Arg Arg Arg Leu Lys Glu Thr Leu Ala Gln Leu Ser
345             350                 355                 360

aga gat aca gac gtg tca cca ttt cca ccc cgt aag cgc cca tca gct      1156
Arg Asp Thr Asp Val Ser Pro Phe Pro Pro Arg Lys Arg Pro Ser Ala
                365                 370                 375

gag cat tcc ctt tcc ata ggg tca ctc cta gat atc tcc aac aca cca      1204
Glu His Ser Leu Ser Ile Gly Ser Leu Leu Asp Ile Ser Asn Thr Pro
                380             385                 390

gag tct agc att aac tat gga gac acc cca aag tct tgt act aag tct      1252
Glu Ser Ser Ile Asn Tyr Gly Asp Thr Pro Lys Ser Cys Thr Lys Ser
            395             400                 405

tct aaa agc tcc act cca gtt cct tca aag cag tca gca agg tgg caa      1300
Ser Lys Ser Ser Thr Pro Val Pro Ser Lys Gln Ser Ala Arg Trp Gln
            410             415                 420

gtt gca aaa gag ctt tat caa act gaa agt aat tat gtt aat ata ttg      1348
Val Ala Lys Glu Leu Tyr Gln Thr Glu Ser Asn Tyr Val Asn Ile Leu
425             430                 435                 440
```

81

```
gca aca att att cag tta ttt caa gta cca ttg gaa gag gaa gga caa    1396
Ala Thr Ile Ile Gln Leu Phe Gln Val Pro Leu Glu Glu Glu Gly Gln
            445                 450                 455

cgt ggt gga cct atc ctt gca cca gag gag att aag act att ttt ggt    1444
Arg Gly Gly Pro Ile Leu Ala Pro Glu Glu Ile Lys Thr Ile Phe Gly
            460                 465                 470

agc atc cca gat atc ttt gat gta cac act aag ata aag gat gat ctt    1492
Ser Ile Pro Asp Ile Phe Asp Val His Thr Lys Ile Lys Asp Asp Leu
            475                 480                 485

gaa gac ctt ata gtt aat tgg gat gag agc aaa agc att ggt gac att    1540
Glu Asp Leu Ile Val Asn Trp Asp Glu Ser Lys Ser Ile Gly Asp Ile
            490                 495                 500

ttt ctg aaa tat tca aaa gat ttg gta aaa acc tac cct ccc ttt gta    1588
Phe Leu Lys Tyr Ser Lys Asp Leu Val Lys Thr Tyr Pro Pro Phe Val
505                 510                 515                 520

aac ttc ttt gaa atg agc aag gaa aca att att aaa tgt gaa aaa cag    1636
Asn Phe Phe Glu Met Ser Lys Glu Thr Ile Ile Lys Cys Glu Lys Gln
                525                 530                 535

aaa cca aga ttt cat gct ttt ctc aag ata aac caa gca aaa cca gaa    1684
Lys Pro Arg Phe His Ala Phe Leu Lys Ile Asn Gln Ala Lys Pro Glu
            540                 545                 550

tgt gga cgg cag agc ctt gtt gaa ctt ctt atc cga cca gta cag agg    1732
Cys Gly Arg Gln Ser Leu Val Glu Leu Leu Ile Arg Pro Val Gln Arg
            555                 560                 565

tta ccc agt gtt gca tta ctt tta aat gat ctt aag aag cat aca gct    1780
Leu Pro Ser Val Ala Leu Leu Leu Asn Asp Leu Lys Lys His Thr Ala
            570                 575                 580

gat gaa aat cca gac aaa agc act tta gaa aaa gct att gga tca ctg    1828
Asp Glu Asn Pro Asp Lys Ser Thr Leu Glu Lys Ala Ile Gly Ser Leu
585                 590                 595                 600

aag gaa gta atg acg cat att aat gag gat aag aga aaa aca gaa gct    1876
Lys Glu Val Met Thr His Ile Asn Glu Asp Lys Arg Lys Thr Glu Ala
                605                 610                 615

caa aag caa att ttt gat gtt gtt tat gaa gta gat gga tgc cca gct    1924
Gln Lys Gln Ile Phe Asp Val Val Tyr Glu Val Asp Gly Cys Pro Ala
            620                 625                 630

aat ctt tta tct tct cac cga agc tta gta cag cgg gtt gaa aca att    1972
Asn Leu Leu Ser Ser His Arg Ser Leu Val Gln Arg Val Glu Thr Ile
            635                 640                 645

tct cta ggt gag cac ccc tgt gac aga gga gaa caa gta act ctc ttc    2020
Ser Leu Gly Glu His Pro Cys Asp Arg Gly Glu Gln Val Thr Leu Phe
650                 655                 660

ctc ttc aat gat tgc cta gag ata gca aga aaa cgg cac aag gtt att    2068
```

82

```
Leu Phe Asn Asp Cys Leu Glu Ile Ala Arg Lys Arg His Lys Val Ile
665             670             675             680

ggc act ttt agg agt cct cat ggc caa acc cga ccc cca gct tct ctt   2116
Gly Thr Phe Arg Ser Pro His Gly Gln Thr Arg Pro Pro Ala Ser Leu
            685             690             695

aag cat att cac cta atg cct ctt tct cag att aag aag gta ttg gac   2164
Lys His Ile His Leu Met Pro Leu Ser Gln Ile Lys Lys Val Leu Asp
            700             705             710

ata aga gag aca gaa gat tgc cat aat gct ttt gcc ttg ctt gtg agg   2212
Ile Arg Glu Thr Glu Asp Cys His Asn Ala Phe Ala Leu Leu Val Arg
        715             720             725

cca cca aca gag cag gca aat gtg cta ctc agt ttc cag atg aca tca   2260
Pro Pro Thr Glu Gln Ala Asn Val Leu Leu Ser Phe Gln Met Thr Ser
        730             735             740

gat gaa ctt cca aaa gaa aac tgg cta aag atg ctg tgt cga cat gta   2308
Asp Glu Leu Pro Lys Glu Asn Trp Leu Lys Met Leu Cys Arg His Val
745             750             755             760

gct aac acc att tgt aaa gca gat gct gag aat ctt att tat act gct   2356
Ala Asn Thr Ile Cys Lys Ala Asp Ala Glu Asn Leu Ile Tyr Thr Ala
                765             770             775

gat cca gaa tcc ttt gaa gta aat aca aaa gat atg gac agt aca ttg   2404
Asp Pro Glu Ser Phe Glu Val Asn Thr Lys Asp Met Asp Ser Thr Leu
            780             785             790

agt aga gca tca aga gca ata aaa aag act tca aaa aag gtt aca aga   2452
Ser Arg Ala Ser Arg Ala Ile Lys Lys Thr Ser Lys Lys Val Thr Arg
        795             800             805

gca ttc tct ttc tcc aaa act cca aaa aga gct ctt cga agg gct ctt   2500
Ala Phe Ser Phe Ser Lys Thr Pro Lys Arg Ala Leu Arg Arg Ala Leu
    810             815             820

atg aca tcc cac ggc tca gtg gag gga aga agt cct tcc agc aat gat   2548
Met Thr Ser His Gly Ser Val Glu Gly Arg Ser Pro Ser Ser Asn Asp
825             830             835             840

aag cat gta atg agt cgt ctt tct agc aca tca tca tta gca ggt atc   2596
Lys His Val Met Ser Arg Leu Ser Ser Thr Ser Ser Leu Ala Gly Ile
                845             850             855

cct tct ccc tcc ctt gtc agc ctt cct tcc ttc ttt gaa agg aga agt   2644
Pro Ser Pro Ser Leu Val Ser Leu Pro Ser Phe Phe Glu Arg Arg Ser
            860             865             870

cat acg tta agt aga tct aca act cat ttg ata tgaagcgtta ccaaaatctt  2697
His Thr Leu Ser Arg Ser Thr Thr His Leu Ile
        875             880

aaattataga aatgtataga cacctcatac tcaaataaga aactgactta aatggtactt  2757
```

83

```
gtaattagca cttggtgaaa gctggaagga agataaataa cactaaacta tgctatttga 2817

ttttttcttct tgaaagagta aggtttacct gttacatttt caagttaatt catgtaaaaa 2877

atgatagtga ttttgatgta atttatctct tgtttgaatc tgtcattcaa aggccaataa 2937

tttaagttgc tatcagctga tattagtagc tttgcaaccc tgatagagta aataaatttt 2997

atgggcgggt gccaaatact gctgtgaatc tatttgtata gtatccatga atgaatttat 3057

ggaaatagat atttgtgcag ctcaatttat gcagagatta aatgacatca taatactgga 3117

tgaaaacttg catagaattc tgattaaata gtgggtctgt ttcacatgtg cagtttgaag 3177

tatttaaaata accactcctt tcacagttta ttttcttctc aagcgttttc aagatctagc 3237

atgtggattt taaaagattt gccctcatta acaagaataa catttaaagg agattgtttc 3297

aaaatatttt tgcaaattga dataaggaca gaaagattga gaaacattgt atattttgca 3357

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actagcaaat cttgatttag tttgatagtg tgtggaattt tattttgaag gataagacca 3477

tgggaaaatt gtggtaaaga ctgtttgtac ccttcatgaa ataattctga agttgccatc 3537

agttttacta atcttctgtg aaatgcatag atatgcgcat gttcaacttt ttattgtggt 3597

cttataatta aatgtaaaat tgaaaattca tttgctgttt caaagtgtga tatctttcac 3657

aatagccttt ttatagtcag taattcagaa taatcaagtt catatggata aatgcatttt 3717

tatttcctat ttctttaggg agtgctacaa atgtttgtca cttaaatttc aagtttctgt 3777

tttaatagtt aactgactat agattgtttt ctatgccatg tatgtgccac ttctgagagt 3837

agtaaatgac tctttgctac attttaaaag caattgtatt agtaagaact ttgtaaataa 3897

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<211> 622
<212> PRT
<213> Homo sapiens

<400> 53
Met Glu Gly Pro Gly Leu Gly Ser Gln Cys Arg Asn His Ser His Gly
1               5                   10                  15

Pro His Pro Pro Gly Phe Gly Arg Tyr Gly Ile Cys Ala His Glu Asn
            20                  25                  30

Lys Glu Leu Ala Asn Ala Arg Glu Ala Leu Pro Leu Ile Glu Asp Ser
        35                  40                  45

Ser Asn Cys Asp Ile Val Lys Ala Thr Gln Tyr Gly Ile Phe Glu Arg
```

84

```
        50                      55                      60
Cys Lys Glu Leu Val Glu Ala Gly Tyr Asp Val Arg Gln Pro Asp Lys
 65                  70                  75                  80

Glu Asn Val Ser Leu Leu His Trp Ala Ala Ile Asn Asn Arg Leu Asp
                 85                  90                  95

Leu Val Lys Phe Tyr Ile Ser Lys Gly Ala Val Val Asp Gln Leu Gly
            100                 105                 110

Gly Asp Leu Asn Ser Thr Pro Leu His Trp Ala Ile Arg Gln Gly His
            115                 120                 125

Leu Pro Met Val Ile Leu Leu Leu Gln His Gly Ala Asp Pro Thr Leu
    130                 135                 140

Ile Asp Gly Glu Gly Phe Ser Ser Ile His Leu Ala Val Leu Phe Gln
145                 150                 155                 160

His Met Pro Ile Ile Ala Tyr Leu Ile Ser Lys Gly Gln Ser Val Asn
            165                 170                 175

Met Thr Asp Val Asn Gly Gln Thr Pro Leu Met Leu Ser Ala His Lys
            180                 185                 190

Val Ile Gly Pro Glu Pro Thr Gly Phe Leu Leu Lys Phe Asn Pro Ser
            195                 200                 205

Leu Asn Val Val Asp Lys Ile His Gln Asn Thr Pro Leu His Trp Ala
    210                 215                 220

Val Ala Ala Gly Asn Val Asn Ala Val Asp Lys Leu Leu Glu Ala Gly
225                 230                 235                 240

Ser Ser Leu Asp Ile Gln Asn Val Lys Gly Glu Thr Pro Leu Asp Met
            245                 250                 255

Ala Leu Gln Asn Lys Asn Gln Leu Ile Ile His Met Leu Lys Thr Glu
            260                 265                 270

Ala Lys Met Arg Ala Asn Gln Lys Phe Arg Leu Trp Arg Trp Leu Gln
            275                 280                 285

Lys Cys Glu Leu Phe Leu Leu Leu Met Leu Ser Val Ile Thr Met Trp
    290                 295                 300

Ala Ile Gly Tyr Ile Leu Asp Phe Asn Ser Asp Ser Trp Leu Leu Lys
305                 310                 315                 320

Gly Cys Leu Leu Val Thr Leu Phe Phe Leu Thr Ser Leu Phe Pro Arg
            325                 330                 335

Phe Leu Val Gly Tyr Lys Asn Leu Val Tyr Leu Pro Thr Ala Phe Leu
            340                 345                 350

Leu Ser Ser Val Phe Trp Ile Phe Met Thr Trp Phe Ile Leu Phe Phe
```

85

```
              355                    360                    365

Pro Asp Leu Ala Gly Ala Pro Phe Tyr Phe Ser Phe Ile Phe Ser Ile
    370                 375                 380

Val Ala Phe Leu Tyr Phe Phe Tyr Lys Thr Trp Ala Thr Asp Pro Gly
385                     390                 395                 400

Phe Thr Lys Ala Ser Glu Glu Glu Lys Lys Val Asn Ile Ile Thr Leu
                405                 410                 415

Ala Glu Thr Gly Ser Leu Asp Phe Arg Thr Phe Cys Thr Ser Cys Leu
            420                 425                 430

Ile Arg Lys Pro Leu Arg Ser Leu His Cys His Val Cys Asn Cys Cys
        435             440                 445

Val Ala Arg Tyr Asp Gln His Cys Leu Trp Thr Gly Arg Cys Ile Gly
    450                 455                 460

Phe Gly Asn His His Tyr Tyr Ile Phe Phe Leu Phe Phe Leu Ser Met
465                 470                 475                 480

Val Cys Gly Trp Ile Ile Tyr Gly Ser Phe Ile Tyr Leu Ser Ser His
            485                 490                 495

Cys Ala Thr Thr Phe Lys Glu Asp Gly Leu Trp Thr Tyr Leu Asn Gln
            500                 505                 510

Ile Val Ala Cys Ser Pro Trp Val Leu Tyr Ile Leu Met Leu Ala Thr
        515                 520             525

Phe His Phe Ser Trp Ser Thr Phe Leu Leu Leu Asn Gln Leu Phe Gln
    530                 535                 540

Ile Ala Phe Leu Gly Leu Thr Ser His Glu Arg Ile Ser Leu Gln Lys
545                 550                 555                 560

Gln Ser Lys His Met Lys Gln Thr Leu Ser Leu Arg Lys Thr Pro Tyr
            565                 570                 575

Asn Leu Gly Phe Met Gln Asn Leu Ala Asp Phe Phe Gln Cys Gly Cys
            580                 585                 590

Phe Gly Leu Val Lys Pro Cys Val Val Asp Trp Thr Ser Gln Tyr Thr
    595                 600                 605

Met Val Phe His Pro Ala Arg Glu Lys Val Leu Arg Ser Val
    610                 615                 620
```

<210> 54
<211> 2426
<212> DNA
<213> Homo sapiens

<220>

86

<221> CDS
<222> (104)..(1969)

<400> 54
gcgccagcag gaagtgggag aagaggcgac ccaaggcggg ctggcgggct ggcggcagtc 60

gctacttgcc tagtagcctc agccgctgtg ggctcctggg gag atg gag ggg ccg 115
                                                     Met Glu Gly Pro
                                                        1

ggg ctg ggc tcg cag tgc agg aat cac agc cat ggc ccc cac cct cca 163
Gly Leu Gly Ser Gln Cys Arg Asn His Ser His Gly Pro His Pro Pro
 5   10   15   20

gga ttt ggt cga tat ggc atc tgt gca cat gaa aac aaa gaa ctt gcc 211
Gly Phe Gly Arg Tyr Gly Ile Cys Ala His Glu Asn Lys Glu Leu Ala
               25   30   35

aat gca aga gaa gct ctt cct ctt ata gag gac tct agt aac tgt gac 259
Asn Ala Arg Glu Ala Leu Pro Leu Ile Glu Asp Ser Ser Asn Cys Asp
            40   45   50

att gtc aaa gct act caa tac gga att ttt gaa cga tgt aaa gag ttg 307
Ile Val Lys Ala Thr Gln Tyr Gly Ile Phe Glu Arg Cys Lys Glu Leu
        55   60   65

gta gaa gca gga tat gat gtc agg caa cca gat aaa gaa aat gtg tcg 355
Val Glu Ala Gly Tyr Asp Val Arg Gln Pro Asp Lys Glu Asn Val Ser
      70   75   80

ctt ctt cat tgg gct gct att aac aac aga ctg gat ctt gta aag ttt 403
Leu Leu His Trp Ala Ala Ile Asn Asn Arg Leu Asp Leu Val Lys Phe
 85   90   95   100

tat att tca aaa ggt gct gtt gta gat cag ttg ggt gga gat tta aat 451
Tyr Ile Ser Lys Gly Ala Val Val Asp Gln Leu Gly Gly Asp Leu Asn
            105   110   115

tca act cct ctt cac tgg gcc atc cga caa gga cat tta cct atg gtc 499
Ser Thr Pro Leu His Trp Ala Ile Arg Gln Gly His Leu Pro Met Val
            120   125   130

ata tta tta ctc cag cat ggt gca gac ccc act ctt att gat gga gag 547
Ile Leu Leu Leu Gln His Gly Ala Asp Pro Thr Leu Ile Asp Gly Glu
           135   140   145

gga ttc agc agc atc cac ctg gca gta ttg ttt caa cac atg cct att 595
Gly Phe Ser Ser Ile His Leu Ala Val Leu Phe Gln His Met Pro Ile
      150   155   160

ata gca tat ctc atc tca aag gga cag agt gtg aat atg aca gat gta 643
Ile Ala Tyr Leu Ile Ser Lys Gly Gln Ser Val Asn Met Thr Asp Val
165   170   175   180

aat ggg cag aca cct ctc atg tta tca gct cac aaa gta att ggg cca 691
Asn Gly Gln Thr Pro Leu Met Leu Ser Ala His Lys Val Ile Gly Pro
           185   190   195

```
gaa cca act gga ttt ctt tta aag ttt aat cct tct ctc aat gtg gtt    739
Glu Pro Thr Gly Phe Leu Leu Lys Phe Asn Pro Ser Leu Asn Val Val
        200             205             210

gat aaa ata cac caa aac act cca ctt cac tgg gca gtt gca gca gga    787
Asp Lys Ile His Gln Asn Thr Pro Leu His Trp Ala Val Ala Ala Gly
        215             220             225

aat gtt aat gca gtt gat aag ctt ttg gaa gct ggt tct agc ctg gat    835
Asn Val Asn Ala Val Asp Lys Leu Leu Glu Ala Gly Ser Ser Leu Asp
        230             235             240

atc cag aat gtt aag gga gaa aca cct ctt gat atg gct cta caa aac    883
Ile Gln Asn Val Lys Gly Glu Thr Pro Leu Asp Met Ala Leu Gln Asn
245             250             255             260

aaa aat cag ctc att att cat atg cta aaa aca gaa gcc aaa atg aga    931
Lys Asn Gln Leu Ile Ile His Met Leu Lys Thr Glu Ala Lys Met Arg
            265             270             275

gcc aac caa aag ttc aga ctt tgg agg tgg ctg cag aaa tgc gag ctc    979
Ala Asn Gln Lys Phe Arg Leu Trp Arg Trp Leu Gln Lys Cys Glu Leu
            280             285             290

ttc ctg ctg ctg atg ctt tct gtg att acc atg tgg gct att gga tac    1027
Phe Leu Leu Leu Met Leu Ser Val Ile Thr Met Trp Ala Ile Gly Tyr
        295             300             305

ata ttg gac ttc aat tca gat tct tgg ctt tta aaa gga tgt ctt cta    1075
Ile Leu Asp Phe Asn Ser Asp Ser Trp Leu Leu Lys Gly Cys Leu Leu
        310             315             320

gta aca ctg ttt ttt ctg aca tct ttg ttt cca agg ttc ttg gtt ggg    1123
Val Thr Leu Phe Phe Leu Thr Ser Leu Phe Pro Arg Phe Leu Val Gly
325             330             335             340

tat aag aac ctt gta tac tta cca aca gcc ttt ctg cta agt tct gtt    1171
Tyr Lys Asn Leu Val Tyr Leu Pro Thr Ala Phe Leu Leu Ser Ser Val
            345             350             355

ttt tgg ata ttt atg act tgg ttc atc tta ttt ttt cct gat tta gca    1219
Phe Trp Ile Phe Met Thr Trp Phe Ile Leu Phe Phe Pro Asp Leu Ala
            360             365             370

gga gcc cct ttc tat ttc agt ttc att ttc agc ata gta gcc ttt cta    1267
Gly Ala Pro Phe Tyr Phe Ser Phe Ile Phe Ser Ile Val Ala Phe Leu
        375             380             385

tac ttt ttc tat aag act tgg gca act gat cca ggc ttc act aag gct    1315
Tyr Phe Phe Tyr Lys Thr Trp Ala Thr Asp Pro Gly Phe Thr Lys Ala
        390             395             400

tct gaa gaa gaa aag aaa gtg aat atc atc acc ctt gca gaa act ggc    1363
Ser Glu Glu Glu Lys Lys Val Asn Ile Ile Thr Leu Ala Glu Thr Gly
405             410             415             420
```

88

```
tct ctg gac ttc aga aca ttt tgt aca tca tgt ctt ata agg aag cca   1411
Ser Leu Asp Phe Arg Thr Phe Cys Thr Ser Cys Leu Ile Arg Lys Pro
            425             430                 435

tta agg tca ctc cac tgc cat gta tgc aac tgc tgt gtg gct cga tat   1459
Leu Arg Ser Leu His Cys His Val Cys Asn Cys Cys Val Ala Arg Tyr
            440             445                 450

gat caa cac tgc ctg tgg act gga cgg tgc ata ggt ttt ggc aac cat   1507
Asp Gln His Cys Leu Trp Thr Gly Arg Cys Ile Gly Phe Gly Asn His
            455             460                 465

cac tat tac ata ttc ttc ttg ttt ttc ctt tcc atg gta tgt ggc tgg   1555
His Tyr Tyr Ile Phe Phe Leu Phe Phe Leu Ser Met Val Cys Gly Trp
            470             475                 480

att ata tat gga tct ttc atc tat ttg tcc agt cat tgt gcc aca aca   1603
Ile Ile Tyr Gly Ser Phe Ile Tyr Leu Ser Ser His Cys Ala Thr Thr
485             490                 495             500

ttc aaa gaa gat gga tta tgg act tac ctc aat cag att gtg gcc tgt   1651
Phe Lys Glu Asp Gly Leu Trp Thr Tyr Leu Asn Gln Ile Val Ala Cys
            505             510                 515

tcc cct tgg gtt tta tat atc ttg atg cta gca act ttc cat ttc tca   1699
Ser Pro Trp Val Leu Tyr Ile Leu Met Leu Ala Thr Phe His Phe Ser
            520             525                 530

tgg tca aca ttt tta tta tta aat caa ctc ttt cag att gcc ttt ctg   1747
Trp Ser Thr Phe Leu Leu Leu Asn Gln Leu Phe Gln Ile Ala Phe Leu
            535             540                 545

ggc ctg acc tcc cat gag aga atc agc ctg cag aag cag agc aag cat   1795
Gly Leu Thr Ser His Glu Arg Ile Ser Leu Gln Lys Gln Ser Lys His
            550             555                 560

atg aaa cag acg ttg tcc ctc agg aag aca cca tac aat ctt gga ttc   1843
Met Lys Gln Thr Leu Ser Leu Arg Lys Thr Pro Tyr Asn Leu Gly Phe
565             570                 575                 580

atg cag aac ctg gca gat ttc ttt cag tgt ggc tgc ttt ggc ttg gtg   1891
Met Gln Asn Leu Ala Asp Phe Phe Gln Cys Gly Cys Phe Gly Leu Val
            585             590                 595

aag ccc tgt gtg gta gat tgg aca tca cag tac acc atg gtc ttt cac   1939
Lys Pro Cys Val Val Asp Trp Thr Ser Gln Tyr Thr Met Val Phe His
            600             605                 610

cca gcc agg gag aag gtt ctt cgc tca gta tgaagaaaag caacccaaaa   1989
Pro Ala Arg Glu Lys Val Leu Arg Ser Val
            615             620

ctctcaatct gatttgtttt tgtttatgtc gatgccctgt agtttgaaag tgaagtaaag 2049

atttagaatt cacctaagtc caaaggaaaa cacgtggttt ttaaagccat taggtaaaaa 2109

aagttctcaa taaaggcatt acaatttttt aggtttagaa agatggactt ttctgataaa 2169
```

89

```
tcttggcaga catctaaaaa aaaaaccata tttttcacaa gaaaatgcaa gttacttttt 2229

ttggaaataa tactcactga ttatggataa aatggaatat tttcagatac tatattggct 2289

gtttcaaaat agtactattc tttaaacttg taatttttgc taagttattt gtctttgttg 2349

tatctataaa tatgtaaaaa atatttaaat agatgtacct gttttgcttt cacacttaat 2409

aaaaaatttt tttttgt                                                2426
```

<210> 55
<211> 257
<212> PRT
<213> Homo sapiens

<400> 55

```
Met Ala Ser Lys Ile Gly Ser Arg Arg Trp Met Leu Gln Leu Ile Met
 1               5                  10                  15

Gln Leu Gly Ser Val Leu Leu Thr Arg Cys Pro Phe Trp Gly Cys Phe
            20                  25                  30

Ser Gln Leu Met Leu Tyr Ala Glu Arg Ala Glu Ala Arg Arg Lys Pro
        35                  40                  45

Asp Ile Pro Val Pro Tyr Leu Tyr Phe Asp Met Gly Ala Ala Val Leu
     50                  55                  60

Cys Ala Ser Phe Met Ser Phe Gly Val Lys Arg Arg Trp Phe Ala Leu
 65                  70                  75                  80

Gly Ala Ala Leu Gln Leu Ala Ile Ser Thr Tyr Ala Ala Tyr Ile Gly
                85                  90                  95

Gly Tyr Val His Tyr Gly Asp Trp Leu Lys Val Arg Met Tyr Ser Arg
            100                 105                 110

Thr Val Ala Ile Ile Gly Gly Phe Leu Val Leu Ala Ser Gly Ala Gly
        115                 120                 125

Glu Leu Tyr Arg Arg Lys Pro Arg Ser Arg Ser Leu Gln Ser Thr Gly
    130                 135                 140

Gln Val Phe Leu Gly Ile Tyr Leu Ile Cys Val Ala Tyr Ser Leu Gln
145                 150                 155                 160

His Ser Lys Glu Asp Arg Leu Ala Tyr Leu Asn His Leu Pro Gly Gly
                165                 170                 175

Glu Leu Met Ile Gln Leu Phe Phe Val Leu Tyr Gly Ile Leu Ala Leu
            180                 185                 190

Ala Phe Leu Ser Gly Tyr Tyr Val Thr Leu Ala Ala Gln Ile Leu Ala
            195                 200                 205
```

90

```
Val Leu Leu Pro Pro Val Met Leu Leu Ile Asp Gly Asn Val Ala Tyr
    210             215             220
```

```
Trp His Asn Thr Arg Arg Val Glu Phe Trp Asn Gln Met Lys Leu Leu
225             230             235             240
```

```
Gly Glu Ser Val Gly Ile Phe Gly Thr Ala Val Ile Leu Ala Thr Asp
                245             250             255
```

```
Gly
```

<210> 56
<211> 1520
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (10)..(780)

<400> 56

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tttcccaag atg gcg tcg aag ata ggt tcg aga cgg tgg atg ttg cag ctg 51
          Met Ala Ser Lys Ile Gly Ser Arg Arg Trp Met Leu Gln Leu
          1               5                   10
```

```
atc atg cag ttg ggt tcg gtg ctg ctc aca cgc tgc ccc ttt tgg ggc    99
Ile Met Gln Leu Gly Ser Val Leu Leu Thr Arg Cys Pro Phe Trp Gly
 15              20                  25                  30
```

```
tgc ttc agc cag ctc atg ctg tac gct gag agg gct gag gca cgc cgg    147
Cys Phe Ser Gln Leu Met Leu Tyr Ala Glu Arg Ala Glu Ala Arg Arg
                35                  40                  45
```

```
aag ccc gac atc cca gtg cct tac ctg tat ttc gac atg ggg gca gcc    195
Lys Pro Asp Ile Pro Val Pro Tyr Leu Tyr Phe Asp Met Gly Ala Ala
            50                  55                  60
```

```
gtg ctg tgc gct agt ttc atg tcc ttt ggc gtg aag cgg cgc tgg ttc    243
Val Leu Cys Ala Ser Phe Met Ser Phe Gly Val Lys Arg Arg Trp Phe
            65                  70                  75
```

```
gcg ctg ggg gcc gca ctc caa ttg gcc att agc acc tac gcc gcc tac    291
Ala Leu Gly Ala Ala Leu Gln Leu Ala Ile Ser Thr Tyr Ala Ala Tyr
        80                  85                  90
```

```
atc ggg ggc tac gtc cac tac ggg gac tgg ctg aag gtc cgt atg tac    339
Ile Gly Gly Tyr Val His Tyr Gly Asp Trp Leu Lys Val Arg Met Tyr
 95                  100                 105                 110
```

```
tcg cgc aca gtt gcc atc atc ggc ggc ttt ctt gtg ttg gcc agc ggt    387
Ser Arg Thr Val Ala Ile Ile Gly Gly Phe Leu Val Leu Ala Ser Gly
                115                 120                 125
```

```
gct ggg gag ctg tac cgc cgg aaa cct cgc agc cgc tcc ctg cag tcc    435
Ala Gly Glu Leu Tyr Arg Arg Lys Pro Arg Ser Arg Ser Leu Gln Ser
```

91

```
              130                  135                  140
acc ggc cag gtg ttc ctg ggt atc tac ctc atc tgt gtg gcc tac tca    483
Thr Gly Gln Val Phe Leu Gly Ile Tyr Leu Ile Cys Val Ala Tyr Ser
        145                  150                  155

ctg cag cac agc aag gag gac cgg ctg gcg tat ctg aac cat ctc cca    531
Leu Gln His Ser Lys Glu Asp Arg Leu Ala Tyr Leu Asn His Leu Pro
    160                  165                  170

gga ggg gag ctg atg atc cag ctg ttc ttc gtg ctg tat ggc atc ctg    579
Gly Gly Glu Leu Met Ile Gln Leu Phe Phe Val Leu Tyr Gly Ile Leu
175                  180                  185                  190

gcc ctg gcc ttt ctg tca ggc tac tac gtg acc ctc gct gcc cag atc    627
Ala Leu Ala Phe Leu Ser Gly Tyr Tyr Val Thr Leu Ala Ala Gln Ile
                195                  200                  205

ctg gct gta ctg ctg ccc cct gtc atg ctg ctc att gat ggc aat gtt    675
Leu Ala Val Leu Leu Pro Pro Val Met Leu Leu Ile Asp Gly Asn Val
            210                  215                  220

gct tac tgg cac aac acg cgg cgt gtt gag ttc tgg aac cag atg aag    723
Ala Tyr Trp His Asn Thr Arg Arg Val Glu Phe Trp Asn Gln Met Lys
        225                  230                  235

ctc ctt gga gag agt gtg ggc atc ttc gga act gct gtc atc ctg gcc    771
Leu Leu Gly Glu Ser Val Gly Ile Phe Gly Thr Ala Val Ile Leu Ala
    240                  245                  250

act gat ggc tgagttttat ggcaagaggc tgagatgggc acagggagcc            820
Thr Asp Gly
255

actgagggtc accctgcctt cctccttgct ggcccagctg ctgtttattt atgctttttg 880

gtctgtttgt ttgatctttt gctttttttaa aattgttttt tgcagttaag aggcagctca 940

tttgtccaaa tttctgggct cagcgcttgg gagggcagga gccctggcac taatgctgta 1000

caggttttttt tcctgttagg agagctgagg ccagctgccc actgagtctc ctgtccctga 1060

gaagggagta tggcagggct gggatgcggc tactgagagt gggagagtgg gagacagagg 1120

aaggaagatg gagattggaa gtgagcaaat gtgaaaaatt cctctttgaa cctggcagat 1180

gcagctaggc tctgcagtgc tgtttggaga ctgtgagagg gagtgtgtgt gttgacacat 1240

gtggatcagg cccaggaagg gcacaggggc tgagcactac agaagtcaca tgggttctca 1300

gggtatgcca ggggcagaaa cagtaccggc tctctgtcac tcaccttgag agtagagcag 1360

accctgttct gctctgggct gtgaaggggt ggagcaggca gtggccagct ttgcccttcc 1420

tgctgtctct gtttctagct ccatggttgg cctggtgggg gtggagttcc ctcccaaaca 1480

ccagaccaca cagtcctcca aaaataaaca ttttatatag                       1520
```

<210> 57
<211> 107
<212> PRT
<213> Homo sapiens

<400> 57

```
Met Ala Leu Phe Ala Gly Gly Lys Leu Arg Val His Leu Asp Ile Gln
 1               5                  10                  15

Val Gly Glu His Ala Asn Asn Tyr Pro Glu Ile Ala Ala Lys Asp Lys
                20                  25                  30

Leu Thr Glu Leu Gln Leu Arg Ala Arg Gln Leu Leu Asp Gln Val Glu
            35                  40                  45

Gln Ile Gln Lys Glu Gln Asp Tyr Gln Arg Tyr Arg Glu Glu Arg Phe
        50                  55                  60

Arg Leu Thr Ser Glu Ser Thr Asn Gln Arg Val Leu Trp Trp Ser Ile
65                  70                  75                  80

Ala Gln Thr Val Ile Leu Ile Leu Thr Gly Ile Trp Gln Met Arg His
                85                  90                  95

Leu Lys Ser Phe Phe Glu Ala Lys Lys Leu Val
            100                 105
```

<210> 58
<211> 1496
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (9)..(329)

<400> 58

```
ctaccagg atg gct ctc ttc gct ggt ggc aaa ctg cgt gtg cat ctc gac   50
         Met Ala Leu Phe Ala Gly Gly Lys Leu Arg Val His Leu Asp
          1               5                  10

atc cag gtt ggg gag cat gcc aac aac tac cct gag att gct gca aaa   98
Ile Gln Val Gly Glu His Ala Asn Asn Tyr Pro Glu Ile Ala Ala Lys
 15                  20                  25                  30

gat aag ctg acg gag cta cag ctc cgc gcc cgc cag ttg ctt gat cag  146
Asp Lys Leu Thr Glu Leu Gln Leu Arg Ala Arg Gln Leu Leu Asp Gln
                35                  40                  45

gtg gaa cag att cag aag gag cag gat tac caa agg tat cgt gaa gag  194
Val Glu Gln Ile Gln Lys Glu Gln Asp Tyr Gln Arg Tyr Arg Glu Glu
                50                  55                  60

cgc ttc cga ctg acg agc gag agc acc aac cag agg gtc cta tgg tgg  242
```

93

```
Arg Phe Arg Leu Thr Ser Glu Ser Thr Asn Gln Arg Val Leu Trp Trp
        65                  70                  75

tcc att gct cag act gtc atc ctc atc ctc act ggc atc tgg cag atg     290
Ser Ile Ala Gln Thr Val Ile Leu Ile Leu Thr Gly Ile Trp Gln Met
    80                  85                  90

cgt cac ctc aag agc ttc ttt gag gcc aag aag ctg gtg tagtgccctc     339
Arg His Leu Lys Ser Phe Phe Glu Ala Lys Lys Leu Val
 95                 100                 105

tttgtatgac ccttcctttt tacctcattt atttggtact ttccccacac agtcctttat  399

ccacctggat ttttagggaa aaaaaatgaa aaagaataag tcacattggt tccatggcca  459

caaaccattc agatcagcca cttgctgacc ctggttctta aggacacatg acattagtcc  519

aatctttcaa aatcttgtct tagggcttgt gaggaatcag aactaaccca ggactcagtc  579

ctgcttcttt tgcctcgagt gattttcctc tgtttttcac taaataagca aatgaaaact  639

ctctccatta ccttctgctt tctctttgtc cacttacgca gtaggtgact ggcatgtgcc  699

acagagcagg ccctgcctca ctgtctgctg gtcagttctg ggttcactta atggctttgt  759

gaatgtaaat aaggggcagg tcttggccct agaggattga gatgtttttc tatatcttag  819

aactattttt ggataaatta tatattttcc ttcctagtag aagtgttact gcctgtaact  879

agctcaaaat accaatgcag tttctgcatt ctgggttttg tttttctttt tttttttttt  939

tttttgagt tttgctcttg tcgcccaggc tggagtgcaa tggcgtgatc tcagctcact  999

ggcaacatct gcctcccggg ttcaaatgat tctcctgcct cagtctcctg agtagctggg  1059

attacaggtg cccgccacca cgctcagcta atttttgtat ttttagtaga gatggggttt  1119

taccatgttg gccaggctgg tcttagactc ctgacctcag ttgatccacc tgcctcagcc  1179

tctgcattca gtttattcac atattttggg taactcccat ggcagctcct aggatttcag  1239

cggtctgtgg gccagaaagc aggcaccagg gctgacctca aggccgtatc agagggccaa  1299

gcagagttct tttggatacc tgcttttcat cccacagggc cttagagtca gaggtaaggt  1359

agcaacagag ctagaatggg gcaatgcact cttaccctcc ttctcaactt ttatttaagc  1419

tgtgctaaat gttttcttca agggaaccag atttagttct ttacagaatt ttccagtgaa  1479

ataaaacatg ttgtaat                                                  1496
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<210> 59
<211> 272
<212> PRT
<213> Homo sapiens

<400> 59

Met	Met	Ile	His	Gly	Phe	Gln	Ser	Ser	His	Arg	Asp	Phe	Cys	Phe	Gly
1				5					10					15	

Pro	Trp	Lys	Leu	Thr	Ala	Ser	Lys	Thr	His	Ile	Met	Lys	Ser	Ala	Asp
			20				25					30			

Val	Glu	Lys	Leu	Ala	Asp	Glu	Leu	His	Met	Pro	Ser	Leu	Pro	Glu	Met
		35				40					45				

Met	Phe	Gly	Asp	Asn	Val	Leu	Arg	Ile	Gln	His	Gly	Ser	Gly	Phe	Gly
	50					55					60				

Ile	Glu	Phe	Asn	Ala	Thr	Asp	Ala	Leu	Arg	Cys	Val	Asn	Asn	Tyr	Gln
65					70				75						80

Gly	Met	Leu	Lys	Val	Ala	Cys	Ala	Glu	Glu	Trp	Gln	Glu	Ser	Arg	Thr
				85					90					95	

Glu	Gly	Glu	His	Ser	Lys	Glu	Val	Ile	Lys	Pro	Tyr	Asp	Trp	Thr	Tyr
			100					105					110		

Thr	Thr	Asp	Tyr	Lys	Gly	Thr	Leu	Leu	Gly	Glu	Ser	Leu	Lys	Leu	Lys
		115				120					125				

Val	Val	Pro	Thr	Thr	Asp	His	Ile	Asp	Thr	Glu	Lys	Leu	Lys	Ala	Arg
	130					135				140					

Glu	Gln	Ile	Lys	Phe	Phe	Glu	Glu	Val	Leu	Leu	Phe	Glu	Asp	Glu	Leu
145					150					155					160

His	Asp	His	Gly	Val	Ser	Ser	Leu	Ser	Val	Lys	Ile	Arg	Val	Met	Pro
				165					170					175	

Ser	Ser	Phe	Phe	Leu	Leu	Leu	Arg	Phe	Phe	Leu	Arg	Ile	Asp	Gly	Val
			180					185					190		

Leu	Ile	Arg	Met	Asn	Asp	Thr	Arg	Leu	Tyr	His	Glu	Ala	Asp	Lys	Thr
		195					200					205			

Tyr	Met	Leu	Arg	Glu	Tyr	Thr	Ser	Arg	Glu	Ser	Lys	Ile	Ser	Ser	Leu
	210					215					220				

Met	His	Val	Pro	Pro	Ser	Leu	Phe	Thr	Glu	Pro	Asn	Glu	Ile	Ser	Gln
225					230					235					240

Tyr	Leu	Pro	Ile	Lys	Glu	Ala	Val	Cys	Glu	Lys	Leu	Ile	Phe	Pro	Glu
				245					250					255	

Arg	Ile	Asp	Pro	Asn	Pro	Ala	Asp	Ser	Gln	Lys	Ser	Thr	Gln	Val	Glu
			260					265					270		

<210> 60
<211> 1916
<212> DNA
<213> Homo sapiens

95

<220>
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<222> (117)..(932)

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gccgccgccg ctgcttcagc ttattccttg tggcctctgc gggtcctgcc tcagcc atg 119
                                                                  Met
                                                                  1

atg atc cac ggc ttc cag agc agc cac cgg gat ttc tgc ttc ggg ccc   167
Met Ile His Gly Phe Gln Ser Ser His Arg Asp Phe Cys Phe Gly Pro
            5   10   15

tgg aag ctg acg gcg tcc aag acc cac atc atg aag tcg gcg gat gtg   215
Trp Lys Leu Thr Ala Ser Lys Thr His Ile Met Lys Ser Ala Asp Val
        20   25   30

gag aaa tta gcc gat gaa tta cat atg cca tct ctc cct gaa atg atg   263
Glu Lys Leu Ala Asp Glu Leu His Met Pro Ser Leu Pro Glu Met Met
    35   40   45

ttt gga gac aac gtt tta aga atc cag cat ggg tct ggc ttt gga att   311
Phe Gly Asp Asn Val Leu Arg Ile Gln His Gly Ser Gly Phe Gly Ile
50   55   60   65

gag ttc aat gct aca gat gcg tta aga tgt gta aac aac tac caa gga   359
Glu Phe Asn Ala Thr Asp Ala Leu Arg Cys Val Asn Asn Tyr Gln Gly
                70   75   80

atg ctt aaa gtg gcc tgt gct gaa gag tgg caa gaa agc agg acg gag   407
Met Leu Lys Val Ala Cys Ala Glu Glu Trp Gln Glu Ser Arg Thr Glu
            85   90   95

ggt gaa cac tcc aaa gag gtt att aaa cca tat gat tgg acc tat aca   455
Gly Glu His Ser Lys Glu Val Ile Lys Pro Tyr Asp Trp Thr Tyr Thr
        100   105   110

aca gat tat aag gga acc tta ctt gga gaa tct ctt aag tta aag gtt   503
Thr Asp Tyr Lys Gly Thr Leu Leu Gly Glu Ser Leu Lys Leu Lys Val
    115   120   125

gta cct aca aca gat cat ata gat aca gaa aaa ttg aaa gcc aga gaa   551
Val Pro Thr Thr Asp His Ile Asp Thr Glu Lys Leu Lys Ala Arg Glu
130   135   140   145

cag att aag ttt ttt gaa gaa gtt ctc ctt ttt gag gat gaa ctt cat   599
Gln Ile Lys Phe Phe Glu Glu Val Leu Leu Phe Glu Asp Glu Leu His
                150   155   160

gat cat gga gtt tca agc ctg agt gtg aag att aga gta atg cct tct   647
Asp His Gly Val Ser Ser Leu Ser Val Lys Ile Arg Val Met Pro Ser
            165   170   175

agc ttt ttc ctg ctg ttg cgg ttt ttc ttg aga att gat ggg gtg ctt   695

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    Ser Phe Phe Leu Leu Leu Arg Phe Phe Leu Arg Ile Asp Gly Val Leu
            180                 185                 190

atc aga atg aat gac acg aga ctt tac cat gag gct gac aag acc tac     743
Ile Arg Met Asn Asp Thr Arg Leu Tyr His Glu Ala Asp Lys Thr Tyr
    195                 200                 205

atg tta cga gaa tat acg tca cga gaa agc aaa att tct agt ttg atg     791
Met Leu Arg Glu Tyr Thr Ser Arg Glu Ser Lys Ile Ser Ser Leu Met
210                 215                 220                 225

cat gtt cca cct tcc ctc ttc acg gaa cct aat gaa ata tcc cag tat     839
His Val Pro Pro Ser Leu Phe Thr Glu Pro Asn Glu Ile Ser Gln Tyr
                230                 235                 240

tta cca ata aag gaa gca gtt tgt gag aag cta ata ttt cca gaa aga     887
Leu Pro Ile Lys Glu Ala Val Cys Glu Lys Leu Ile Phe Pro Glu Arg
                245                 250                 255

att gat cct aac cca gca gac tca caa aaa agt aca caa gtg gaa         932
Ile Asp Pro Asn Pro Ala Asp Ser Gln Lys Ser Thr Gln Val Glu
            260                 265                 270
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taaaatgtga tacaacatat actcactatg gaatctgact ggacaccttg gctatttgta  992

aggggttatt tttattatga gaattaattg ccttgtttat gtacagattt tctgtagcct 1052

taaaggaaaa aaaaataaag atcgttacag gcaggtttca ctcaactgct atttgtactg 1112

tctgtcttca cattcatatt ccagatttat attttctgga gttaaatttg gatgatttct 1172

aaattatcac aaagtgggac ctcagcagta gtgatgtgtg tgtctcatga gcagtgagca 1232

cagtctgcat tcatcatgaa acactatctt ctaccaggag gaggttaatg taaatcacca 1292

aatcccaatg ccttgtgact ttcataggat tcctgatcat gcatgttgat gtactggctc 1352

ttcactttgg gctttctgat gtttattcac acctttggag agttgcaact tgccacatac 1412

gaaattagtc tcatagtgta gtgaacttca accccaaaat tttaaaaatg tatttccccc 1472

cagttttaaa ttgcctttga aatttaaaaa aaaaaattta gacttagtac cagaaccaaa 1532

aatacctaga tttttggaga acttattaca tacatagaaa catgaatatg gtttaccwct 1592

gtgtgtgtgt gtgtgtgtgt gtgtatacag actttttttt ttaacttgtt gattcagatg 1652

tcttggtccc tgaatagtcc tagattactt attttgagaa ttgattgtta aaaattacag 1712

ggaattaaaa taattgcctt tttttttta gagggtaaga gatgggtaga agagtatgcc 1772

tctgaaaatt ttattagttt attcttgtgg agaataccaa gaaaatgtgt atttgcccat 1832

tgctaaatat gatatatgcc attttgtatt tatttgtccc aagtgtcttt ttttaagagg 1892

agaataaaca ataaggaatt actg                                        1916
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97

<210> 61
<211> 219
<212> PRT
<213> Homo sapiens

<400> 61
Met Asn Arg Leu Phe Gly Lys Ala Lys Pro Lys Ala Pro Pro Pro Ser
 1   5   10   15

Leu Thr Asp Cys Ile Gly Thr Val Asp Ser Arg Ala Glu Ser Ile Asp
                20   25   30

Lys Lys Ile Ser Arg Leu Asp Ala Glu Leu Val Lys Tyr Lys Asp Gln
            35   40   45

Ile Lys Lys Met Arg Glu Gly Pro Ala Lys Asn Met Val Lys Gln Lys
        50   55   60

Ala Leu Arg Val Leu Lys Gln Lys Arg Met Tyr Glu Gln Gln Arg Asp
65   70   75   80

Asn Leu Ala Gln Gln Ser Phe Asn Met Glu Gln Ala Asn Tyr Thr Ile
                85   90   95

Gln Ser Leu Lys Asp Thr Lys Thr Thr Val Asp Ala Met Lys Leu Gly
            100   105   110

Val Lys Glu Met Lys Lys Ala Tyr Lys Gln Val Lys Ile Asp Gln Ile
            115   120   125

Glu Asp Leu Gln Asp Gln Leu Glu Asp Met Met Glu Asp Ala Asn Glu
        130   135   140

Ile Gln Glu Ala Leu Ser Arg Ser Tyr Gly Thr Pro Glu Leu Asp Glu
145   150   155   160

Asp Asp Leu Glu Ala Glu Leu Asp Ala Leu Gly Asp Glu Leu Leu Ala
                165   170   175

Asp Glu Asp Ser Ser Tyr Leu Asp Glu Ala Ala Ser Ala Pro Ala Ile
                180   185   190

Pro Glu Gly Val Pro Thr Asp Thr Lys Asn Lys Asp Gly Val Leu Val
            195   200   205

Asp Glu Phe Gly Leu Pro Gln Ile Pro Ala Ser
    210   215

<210> 62
<211> 1362
<212> DNA
<213> Homo sapiens

<220>
<221> CDS

98

<222> (49)..(705)

<400> 62
gttttctggt tttgctctag tgtttgggtt tcttcgcggc tgctcaag atg aac cga   57
                                                         Met Asn Arg
                                                          1

ctc ttc ggg aaa gcg aaa ccc aag gct ccg ccg ccc agc ctg act gac   105
Leu Phe Gly Lys Ala Lys Pro Lys Ala Pro Pro Pro Ser Leu Thr Asp
     5   10   15

tgc att ggc acg gtg gac agt aga gca gaa tcc att gac aag aag att   153
Cys Ile Gly Thr Val Asp Ser Arg Ala Glu Ser Ile Asp Lys Lys Ile
 20   25   30   35

tct cga ttg gat gct gag cta gtg aag tat aag gat cag atc aag aag   201
Ser Arg Leu Asp Ala Glu Leu Val Lys Tyr Lys Asp Gln Ile Lys Lys
                 40   45   50

atg aga gag ggt cct gca aag aat atg gtc aag cag aaa gcc ttg cga   249
Met Arg Glu Gly Pro Ala Lys Asn Met Val Lys Gln Lys Ala Leu Arg
                 55   60   65

gtt tta aag caa aag agg atg tat gag cag cag cgg gac aat ctt gcc   297
Val Leu Lys Gln Lys Arg Met Tyr Glu Gln Gln Arg Asp Asn Leu Ala
             70   75   80

caa cag tca ttc aac atg gaa caa gcc aat tat acc atc cag tct ttg   345
Gln Gln Ser Phe Asn Met Glu Gln Ala Asn Tyr Thr Ile Gln Ser Leu
         85   90   95

aag gac acc aag acc acg gtt gat gct atg aaa ctg gga gta aag gaa   393
Lys Asp Thr Lys Thr Thr Val Asp Ala Met Lys Leu Gly Val Lys Glu
100   105   110   115

atg aag aag gca tac aag caa gtg aag atc gac cag att gag gat tta   441
Met Lys Lys Ala Tyr Lys Gln Val Lys Ile Asp Gln Ile Glu Asp Leu
                120   125   130

caa gac cag cta gag gat atg atg gaa gat gca aat gaa atc caa gaa   489
Gln Asp Gln Leu Glu Asp Met Met Glu Asp Ala Asn Glu Ile Gln Glu
                135   140   145

gca ctg agt cgc agt tat ggc acc cca gaa ctg gat gaa gat gat tta   537
Ala Leu Ser Arg Ser Tyr Gly Thr Pro Glu Leu Asp Glu Asp Asp Leu
                150   155   160

gaa gca gag ttg gat gca cta ggt gat gag ctt ctg gct gat gaa gac   585
Glu Ala Glu Leu Asp Ala Leu Gly Asp Glu Leu Leu Ala Asp Glu Asp
        165   170   175

agt tct tat ttg gat gag gca gca tct gca cct gca att cca gaa ggt   633
Ser Ser Tyr Leu Asp Glu Ala Ala Ser Ala Pro Ala Ile Pro Glu Gly
180   185   190   195

gtt ccc act gat aca aaa aac aag gat gga gtt ctg gtg gat gaa ttt   681
Val Pro Thr Asp Thr Lys Asn Lys Asp Gly Val Leu Val Asp Glu Phe

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            200                    205                    210
gga ttg cca cag atc cct gct tca tagatttgca tcattcaagc atatcttgta  735
Gly Leu Pro Gln Ile Pro Ala Ser
            215

aaacaaacac atattatggg actaggaaat atttatcttt ccaaatttgc cataacagat  795

ttaggtttct ttcctttctt tgaaggaaag tttaattaca ttgctctttt attttttcca  855

ttaagagact cattgcttgg gaaatgcttt cttcgtacta aaatttgatt cctttttttt  915

cttatgaaaa acgaactcag tttaaaagta tttttagctc gtatgacttg ttttcattca  975

ttaataataa tttgaaataa aactaaggaa atggaatctt aaaagtctat gacagtgtaa 1035

ctctacagtc tcaaaatgac ctgataaatt gataagacaa agatgagatt attggggctg 1095

ttcatattat gattcagaat cattttctat tgtggtatta taggttggtt aaagtgatgg 1155

cctttttgat gggttttgtt gtgtcttgtg aacaagtcgt tactgtgtcc attattggaa 1215

tggaattatc actactgtat catgagtggg tattttgatt ctatggttcc ctcagtatta 1275

catcttgact tgtaatcaat tatgaatatt tcttgatatt taatgtatag gacatttatt 1335

tatactcaat aaatattttt caaaagg                                     1362
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<210> 63
<211> 622
<212> PRT
<213> Homo sapiens

<400> 63
Met Ala Asp Gly Pro Asp Glu Tyr Asp Thr Glu Ala Gly Cys Val Pro
 1               5                  10                  15

Leu Leu His Pro Glu Glu Ile Lys Pro Gln Ser His Tyr Asn His Gly
            20                  25                  30

Tyr Gly Glu Pro Leu Gly Arg Lys Thr His Ile Asp Asp Tyr Ser Thr
        35                  40                  45

Trp Asp Ile Val Lys Ala Thr Gln Tyr Gly Ile Tyr Glu Arg Cys Arg
    50                  55                  60

Glu Leu Val Glu Ala Gly Tyr Asp Val Arg Gln Pro Asp Lys Glu Asn
 65                  70                  75                  80

Val Thr Leu Leu His Trp Ala Ala Ile Asn Asn Arg Ile Asp Leu Val
                85                  90                  95

Lys Tyr Tyr Ile Ser Lys Gly Ala Ile Val Asp Gln Leu Gly Gly Asp
            100                 105                 110

Leu Asn Ser Thr Pro Leu His Trp Ala Thr Arg Gln Gly His Leu Ser
```

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                 115                     120                     125
Met Val Val Gln Leu Met Lys Tyr Gly Ala Asp Pro Ser Leu Ile Asp
    130                     135                     140

Gly Glu Gly Cys Ser Cys Ile His Leu Ala Ala Gln Phe Gly His Thr
145                     150                     155                     160

Ser Ile Val Ala Tyr Leu Ile Ala Lys Gly Gln Asp Val Asp Met Met
                165                     170                     175

Asp Gln Asn Gly Met Thr Pro Leu Met Trp Ala Ala Tyr Arg Thr His
                180                     185                     190

Ser Val Asp Pro Thr Arg Leu Leu Leu Thr Phe Asn Val Ser Val Asn
                195                     200                     205

Leu Gly Asp Lys Tyr His Lys Asn Thr Ala Leu His Trp Ala Val Leu
    210                     215                     220

Ala Gly Asn Thr Thr Val Ile Ser Leu Leu Leu Glu Ala Gly Ala Asn
225                     230                     235                     240

Val Asp Ala Gln Asn Ile Lys Gly Glu Ser Ala Leu Asp Leu Ala Lys
                245                     250                     255

Gln Arg Lys Asn Val Trp Met Ile Asn His Leu Gln Glu Ala Arg Gln
                260                     265                     270

Ala Lys Gly Tyr Asp Asn Pro Ser Phe Leu Arg Lys Leu Lys Ala Asp
                275                     280                     285

Lys Glu Phe Arg Gln Lys Val Met Leu Gly Thr Pro Phe Leu Val Ile
    290                     295                     300

Trp Leu Val Gly Phe Ile Ala Asp Leu Asn Ile Asp Ser Trp Leu Ile
305                     310                     315                     320

Lys Gly Leu Met Tyr Gly Gly Val Trp Ala Thr Val Gln Phe Leu Ser
                325                     330                     335

Lys Ser Phe Phe Asp His Ser Met His Ser Ala Leu Pro Leu Gly Ile
                340                     345                     350

Tyr Leu Ala Thr Lys Phe Trp Met Tyr Val Thr Trp Phe Phe Trp Phe
                355                     360                     365

Trp Asn Asp Leu Asn Phe Leu Phe Ile His Leu Pro Phe Leu Ala Asn
    370                     375                     380

Ser Val Ala Leu Phe Tyr Asn Phe Gly Lys Ser Trp Lys Ser Asp Pro
385                     390                     395                     400

Gly Ile Ile Lys Ala Thr Glu Glu Gln Lys Lys Lys Thr Ile Val Glu
                405                     410                     415

Leu Ala Glu Thr Gly Ser Leu Asp Leu Ser Ile Phe Cys Ser Thr Cys
```

101

<pre>
              420   425   430

Leu Ile Arg Lys Pro Val Arg Ser Lys His Cys Gly Val Cys Asn Arg
        435   440   445

Cys Ile Ala Lys Phe Asp His His Cys Pro Trp Val Gly Asn Cys Val
        450   455   460

Gly Ala Gly Asn His Arg Tyr Phe Met Gly Tyr Leu Phe Phe Leu Leu
465   470   475   480

Phe Met Ile Cys Trp Met Ile Tyr Gly Cys Ile Ser Tyr Trp Gly Leu
            485   490   495

His Cys Glu Thr Thr Tyr Thr Lys Asp Gly Phe Trp Thr Tyr Ile Thr
            500   505   510

Gln Ile Ala Thr Cys Ser Pro Trp Met Phe Trp Met Phe Leu Asn Ser
        515   520   525

Val Phe His Phe Met Trp Val Ala Val Leu Leu Met Cys Gln Met Tyr
    530   535   540

Gln Ile Ser Cys Leu Gly Ile Thr Thr Asn Glu Arg Met Asn Ala Arg
545   550   555   560

Arg Tyr Lys His Phe Lys Val Thr Thr Thr Ser Ile Glu Ser Pro Phe
            565   570   575

Asn His Gly Cys Val Arg Asn Ile Ile Asp Phe Phe Glu Phe Arg Cys
            580   585   590

Cys Gly Leu Phe Arg Pro Val Ile Val Asp Trp Thr Arg Gln Tyr Thr
            595   600   605

Ile Glu Tyr Asp Gln Ile Ser Gly Ser Gly Tyr Gln Leu Val
    610   615   620
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<210> 64
<211> 2948
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (14)..(1879)

<400> 64

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           Met Ala Asp Gly Pro Asp Glu Tyr Asp Thr Glu Ala
            1   5   10

ggc tgt gtg ccc ctt ctc cac cca gag gaa atc aaa ccc caa agc cat   97
Gly Cys Val Pro Leu Leu His Pro Glu Glu Ile Lys Pro Gln Ser His
        15   20   25
</pre>

102

```
tat aac cat gga tat ggt gaa cct ctt gga cgg aaa act cat att gat    145
Tyr Asn His Gly Tyr Gly Glu Pro Leu Gly Arg Lys Thr His Ile Asp
    30                  35                  40

gat tac agc aca tgg gac ata gtc aag gct aca caa tat gga ata tat    193
Asp Tyr Ser Thr Trp Asp Ile Val Lys Ala Thr Gln Tyr Gly Ile Tyr
 45                  50                  55                  60

gaa cgc tgt cga gaa ttg gtg gaa gca ggt tat gat gta cgg caa ccg    241
Glu Arg Cys Arg Glu Leu Val Glu Ala Gly Tyr Asp Val Arg Gln Pro
                    65                  70                  75

gac aaa gaa aat gtt acc ctc ctc cat tgg gct gcc atc aat aac aga    289
Asp Lys Glu Asn Val Thr Leu Leu His Trp Ala Ala Ile Asn Asn Arg
                     80                  85                  90

ata gat tta gtc aaa tac tat att tcg aaa ggt gct att gtg gat caa    337
Ile Asp Leu Val Lys Tyr Tyr Ile Ser Lys Gly Ala Ile Val Asp Gln
                 95                  100                 105

ctt gga ggg gac ctg aat tca act cca ttg cac tgg gcc aca aga caa    385
Leu Gly Gly Asp Leu Asn Ser Thr Pro Leu His Trp Ala Thr Arg Gln
    110                 115                 120

ggc cat cta tcc atg gtt gtg caa cta atg aaa tat ggt gca gat cct    433
Gly His Leu Ser Met Val Val Gln Leu Met Lys Tyr Gly Ala Asp Pro
125                 130                 135                 140

tca tta att gat gga gaa gga tgt agc tgt att cat ctg gct gct cag    481
Ser Leu Ile Asp Gly Glu Gly Cys Ser Cys Ile His Leu Ala Ala Gln
                    145                 150                 155

ttc gga cat acc tca att gtt gct tat ctc ata gca aaa gga cag gat    529
Phe Gly His Thr Ser Ile Val Ala Tyr Leu Ile Ala Lys Gly Gln Asp
                160                 165                 170

gta gat atg atg gat cag aat gga atg acg cct tta atg tgg gca gca    577
Val Asp Met Met Asp Gln Asn Gly Met Thr Pro Leu Met Trp Ala Ala
    175                 180                 185

tat aga aca cat agt gtg gat cca act aga ttg ctt tta aca ttc aat    625
Tyr Arg Thr His Ser Val Asp Pro Thr Arg Leu Leu Leu Thr Phe Asn
    190                 195                 200

gtt tca gtt aac ctt ggt gac aag tat cac aaa aac act gct ctg cat    673
Val Ser Val Asn Leu Gly Asp Lys Tyr His Lys Asn Thr Ala Leu His
205                 210                 215                 220

tgg gca gtg cta gca ggg aat acc aca gtc att agc ctt ctt ctg gaa    721
Trp Ala Val Leu Ala Gly Asn Thr Thr Val Ile Ser Leu Leu Leu Glu
                    225                 230                 235

gct gga gct aat gtt gat gcc cag aat atc aag ggc gaa tca gcg ctt    769
Ala Gly Ala Asn Val Asp Ala Gln Asn Ile Lys Gly Glu Ser Ala Leu
                240                 245                 250

gat ttg gca aaa cag aga aaa aat gtg tgg atg atc aac cac tta caa    817
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103

```
Asp Leu Ala Lys Gln Arg Lys Asn Val Trp Met Ile Asn His Leu Gln
        255             260             265

gag gca agg caa gca aaa gga tat gac aat ccg tcc ttc ctt aga aag    865
Glu Ala Arg Gln Ala Lys Gly Tyr Asp Asn Pro Ser Phe Leu Arg Lys
        270             275             280

ctg aaa gct gat aag gaa ttt cgg cag aaa gta atg tta gga act cct    913
Leu Lys Ala Asp Lys Glu Phe Arg Gln Lys Val Met Leu Gly Thr Pro
285             290             295             300

ttc cta gtt att tgg ctg gtt ggg ttt ata gca gac cta aat att gat    961
Phe Leu Val Ile Trp Leu Val Gly Phe Ile Ala Asp Leu Asn Ile Asp
                305             310             315

tct tgg ctc att aaa ggg cta atg tat ggt ggt gtt tgg gct aca gta   1009
Ser Trp Leu Ile Lys Gly Leu Met Tyr Gly Gly Val Trp Ala Thr Val
                320             325             330

cag ttt ctt tca aaa tcc ttt ttc gat cat tca atg cat agt gca ttg   1057
Gln Phe Leu Ser Lys Ser Phe Phe Asp His Ser Met His Ser Ala Leu
            335             340             345

ccc ctt ggg ata tat ttg gca acc aaa ttc tgg atg tat gtg acg tgg   1105
Pro Leu Gly Ile Tyr Leu Ala Thr Lys Phe Trp Met Tyr Val Thr Trp
        350             355             360

ttc ttc tgg ttt tgg aat gat ctc aac ttt tta ttt atc cat ctt cca   1153
Phe Phe Trp Phe Trp Asn Asp Leu Asn Phe Leu Phe Ile His Leu Pro
365             370             375             380

ttc ctt gcc aat agt gtt gca ctt ttc tac aat ttt gga aaa tct tgg   1201
Phe Leu Ala Asn Ser Val Ala Leu Phe Tyr Asn Phe Gly Lys Ser Trp
                385             390             395

aaa tca gat cca ggg att att aaa gca aca gaa gag caa aag aaa aag   1249
Lys Ser Asp Pro Gly Ile Ile Lys Ala Thr Glu Glu Gln Lys Lys Lys
                400             405             410

aca ata gtt gaa ctt gca gag aca gga agt ctg gac ctc agt ata ttc   1297
Thr Ile Val Glu Leu Ala Glu Thr Gly Ser Leu Asp Leu Ser Ile Phe
            415             420             425

tgc agt acc tgt ttg ata cga aaa ccg gtg agg tcc aaa cat tgt ggt   1345
Cys Ser Thr Cys Leu Ile Arg Lys Pro Val Arg Ser Lys His Cys Gly
        430             435             440

gtg tgc aac cgc tgt ata gca aaa ttt gat cat cat tgc cca tgg gtg   1393
Val Cys Asn Arg Cys Ile Ala Lys Phe Asp His His Cys Pro Trp Val
445             450             455             460

ggt aac tgt gta ggt gca ggc aac cat aga tat ttt atg ggc tac cta   1441
Gly Asn Cys Val Gly Ala Gly Asn His Arg Tyr Phe Met Gly Tyr Leu
                465             470             475

ttc ttc ttg ctt ttt atg atc tgc tgg atg att tat ggt tgt ata tct   1489
Phe Phe Leu Leu Phe Met Ile Cys Trp Met Ile Tyr Gly Cys Ile Ser
```

104

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                480                    485                        490
tac tgg gga ctc cac tgt gag acc act tac acc aag gat gga ttt tgg      1537
Tyr Trp Gly Leu His Cys Glu Thr Thr Tyr Thr Lys Asp Gly Phe Trp
        495                    500                    505

aca tac att act cag att gcc acg tgt tca cct tgg atg ttt tgg atg      1585
Thr Tyr Ile Thr Gln Ile Ala Thr Cys Ser Pro Trp Met Phe Trp Met
        510                    515                    520

ttc ctg aac agt gtt ttc cac ttc atg tgg gtg gct gta tta ctc atg      1633
Phe Leu Asn Ser Val Phe His Phe Met Trp Val Ala Val Leu Leu Met
525                    530                    535                    540

tgt cag atg tac cag ata tca tgt tta ggt att act aca aat gaa aga      1681
Cys Gln Met Tyr Gln Ile Ser Cys Leu Gly Ile Thr Thr Asn Glu Arg
                545                    550                    555

atg aat gcc agg aga tac aag cac ttt aaa gtc aca aca acg tct att      1729
Met Asn Ala Arg Arg Tyr Lys His Phe Lys Val Thr Thr Thr Ser Ile
                560                    565                    570

gaa agc cca ttc aac cat gga tgt gta aga aat att ata gac ttc ttt      1777
Glu Ser Pro Phe Asn His Gly Cys Val Arg Asn Ile Ile Asp Phe Phe
                575                    580                    585

gaa ttt cga tgc tgt ggc ctc ttt cgt cct gtt atc gtg gac tgg acc      1825
Glu Phe Arg Cys Cys Gly Leu Phe Arg Pro Val Ile Val Asp Trp Thr
                590                    595                    600

agg cag tat aca ata gaa tat gac caa ata tca gga tct ggg tac cag      1873
Arg Gln Tyr Thr Ile Glu Tyr Asp Gln Ile Ser Gly Ser Gly Tyr Gln
605                    610                    615                    620

ctg gtg tagcgacatc ttatcctatg aagcatattg ctgagtggtg cctgaaaatt      1929
Leu Val

gtgtctgtcc gtgtctttct cacactcgaa tccacatcct ttgaacaaga gcatgctatg 1989

tgtagggcta atggtgaatt ttacagtctt tttttcaaca cttttattaa caaaagtaaa 2049

catggacaga acacactgcc atttctggga agagtaaaga tgataaaaaa taattttaat 2109

ggttcttaat gtggaaattc acaacatact caacttttgg gttttgttct cacagtattt 2169

ttcacaaaaa aagggtaaac ttattctatt gacagacatg gtgtactgat cagaaatgtt 2229

cagtttttaac taaaactaaa tttatgttat ttggctaaat gttatgatgc agtctagtac 2289

gagtattgca tctaattcca ggagcattgt tttaagttga ttgactagtt attatgtaca 2349

tttcagaatg tacacataaa tactgtgatg aaaatcatgt gattgggatc tactgtgatg 2409

ttgtcttcaa aggcaggaga aaataatgtt cacaataaaa tgtgctaaca atgttttgtt 2469

tctatcagct gttgcaatgc tgatatattt ctagttcagt gaaataattt gtagtaacct 2529
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105

tactctgagg ttttacggtc tgataatgaa gcacttgcat gagtatagta agtcatgttt 2589

ttttgttcaa atttaaaagc cctgctaatt gcatgacaca ccacatagaa tgtatactag 2649

cagatactat ccagtgaagc ataaattaga atttatttg atgttcaaaa acagttccat 2709

ttttaagggt taaggtggta ttttcaagaa aaggcagaac aaataatgca aaattctcag 2769

taatagtgat acatggatat acttcctttt aaattctcag ctgcaaaata attgtagaca 2829

aaataatggc atttaactaa agatggagca tgatctgtgt acatagcaca tgtgaataaa 2889

agaaaagctg acagtatatt ctggtttcaa taaaatgacc tatcagaaag tagaatttc 2948

<210> 65
<211> 632
<212> PRT
<213> Homo sapiens

<400> 65
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 1   5   10   15

Glu Tyr Asp Thr Glu Ala Gly Cys Val Pro Leu Leu His Pro Glu Glu
            20   25   30

Ile Lys Pro Gln Ser His Tyr Asn His Gly Tyr Gly Glu Pro Leu Gly
        35   40   45

Arg Lys Thr His Ile Asp Asp Tyr Ser Thr Trp Asp Ile Val Lys Ala
    50   55   60

Thr Gln Tyr Gly Ile Tyr Glu Arg Cys Arg Glu Leu Val Glu Ala Gly
 65   70   75   80

Tyr Asp Val Arg Gln Pro Asp Lys Glu Asn Val Thr Leu Leu His Trp
                85   90   95

Ala Ala Ile Asn Asn Arg Ile Asp Leu Val Lys Tyr Tyr Ile Ser Lys
            100   105   110

Gly Ala Ile Val Asp Gln Leu Gly Gly Asp Leu Asn Ser Thr Pro Leu
        115   120   125

His Trp Ala Thr Arg Gln Gly His Leu Ser Met Val Val Gln Leu Met
    130   135   140

Lys Tyr Gly Ala Asp Pro Ser Leu Ile Asp Gly Glu Gly Cys Ser Cys
145   150   155   160

Ile His Leu Ala Ala Gln Phe Gly His Thr Ser Ile Val Ala Tyr Leu
                165   170   175

Ile Ala Lys Gly Gln Asp Val Asp Met Met Asp Gln Asn Gly Met Thr
                180   185   190

106

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Pro Leu Met Trp Ala Ala Tyr Arg Thr His Ser Val Asp Pro Thr Arg
        195             200             205

Leu Leu Leu Thr Phe Asn Val Ser Val Asn Leu Gly Asp Lys Tyr His
    210             215             220

Lys Asn Thr Ala Leu His Trp Ala Val Leu Ala Gly Asn Thr Thr Val
225             230             235             240

Ile Ser Leu Leu Leu Glu Ala Gly Ala Asn Val Asp Ala Gln Asn Ile
            245             250             255

Lys Gly Glu Ser Ala Leu Asp Leu Ala Lys Gln Arg Lys Asn Val Trp
            260             265             270

Met Ile Asn His Leu Gln Glu Ala Arg Gln Ala Lys Gly Tyr Asp Asn
        275             280             285

Pro Ser Phe Leu Arg Lys Leu Lys Ala Asp Lys Glu Phe Arg Gln Lys
    290             295             300

Val Met Leu Gly Thr Pro Phe Leu Val Ile Trp Leu Val Gly Phe Ile
305             310             315             320

Ala Asp Leu Asn Ile Asp Ser Trp Leu Ile Lys Gly Leu Met Tyr Gly
            325             330             335

Gly Val Trp Ala Thr Val Gln Phe Leu Ser Lys Ser Phe Phe Asp His
            340             345             350

Ser Met His Ser Ala Leu Pro Leu Gly Ile Tyr Leu Ala Thr Lys Phe
        355             360             365

Trp Met Tyr Val Thr Trp Phe Phe Trp Phe Trp Asn Asp Leu Asn Phe
    370             375             380

Leu Phe Ile His Leu Pro Phe Leu Ala Asn Ser Val Ala Leu Phe Tyr
385             390             395             400

Asn Phe Gly Lys Ser Trp Lys Ser Asp Pro Gly Ile Ile Lys Ala Thr
            405             410             415

Glu Glu Gln Lys Lys Lys Thr Ile Val Glu Leu Ala Glu Thr Gly Ser
            420             425             430

Leu Asp Leu Ser Ile Phe Cys Ser Thr Cys Leu Ile Arg Lys Pro Val
            435             440             445

Arg Ser Lys His Cys Gly Val Cys Asn Arg Cys Ile Ala Lys Phe Asp
    450             455             460

His His Cys Pro Trp Val Gly Asn Cys Val Gly Ala Gly Asn His Arg
465             470             475             480

Tyr Phe Met Gly Tyr Leu Phe Phe Leu Leu Phe Met Ile Cys Trp Met
            485             490             495
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Ile Tyr Gly Cys Ile Ser Tyr Trp Gly Leu His Cys Glu Thr Thr Tyr
        500                 505                 510

Thr Lys Asp Gly Phe Trp Thr Tyr Ile Thr Gln Ile Ala Thr Cys Ser
        515                 520                 525

Pro Trp Met Phe Trp Met Phe Leu Asn Ser Val Phe His Phe Met Trp
    530                 535                 540

Val Ala Val Leu Leu Met Cys Gln Met Tyr Gln Ile Ser Cys Leu Gly
545                 550                 555                 560

Ile Thr Thr Asn Glu Arg Met Asn Ala Arg Arg Tyr Lys His Phe Lys
                565                 570                 575

Val Thr Thr Thr Ser Ile Glu Ser Pro Phe Asn His Gly Cys Val Arg
            580                 585                 590

Asn Ile Ile Asp Phe Phe Glu Phe Arg Cys Cys Gly Leu Phe Arg Pro
        595                 600                 605

Val Ile Val Asp Trp Thr Arg Gln Tyr Thr Ile Glu Tyr Asp Gln Ile
    610                 615                 620

Ser Gly Ser Gly Tyr Gln Leu Val
625                 630


<210> 66
<211> 4715
<212> DNA
<213> Homo sapiens

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<221> CDS
<222> (108)..(2003)

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cctccgcctc gcccgagccc cgggagggtg aaacgctttc tcccagc atg cag cgg    116
                                                    Met Gln Arg
                                                      1

gag gag gga ttt aac acc aag atg gcg gac ggc ccg gat gag tac gat   164
Glu Glu Gly Phe Asn Thr Lys Met Ala Asp Gly Pro Asp Glu Tyr Asp
    5                  10                  15

acc gaa gcg ggc tgt gtg ccc ctt ctc cac cca gag gaa atc aaa ccc   212
Thr Glu Ala Gly Cys Val Pro Leu Leu His Pro Glu Glu Ile Lys Pro
 20                  25                  30                  35

caa agc cat tat aac cat gga tat ggt gaa cct ctt gga cgg aaa act   260
Gln Ser His Tyr Asn His Gly Tyr Gly Glu Pro Leu Gly Arg Lys Thr
                 40                  45                  50

cat att gat gat tac agc aca tgg gac ata gtc aag gct aca caa tat   308
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His Ile Asp Asp Tyr Ser Thr Trp Asp Ile Val Lys Ala Thr Gln Tyr
    55   60   65

gga ata tat gaa cgc tgt cga gaa ttg gtg gaa gca ggt tat gat gta   356
Gly Ile Tyr Glu Arg Cys Arg Glu Leu Val Glu Ala Gly Tyr Asp Val
    70   75   80

cgg caa ccg gac aaa gaa aat gtt acc ctc ctc cat tgg gct gcc atc   404
Arg Gln Pro Asp Lys Glu Asn Val Thr Leu Leu His Trp Ala Ala Ile
    85   90   95

aat aac aga ata gat tta gtc aaa tac tat att tcg aaa ggt gct att   452
Asn Asn Arg Ile Asp Leu Val Lys Tyr Tyr Ile Ser Lys Gly Ala Ile
100   105   110   115

gtg gat caa ctt gga ggg gac ctg aat tca act cca ttg cac tgg gcc   500
Val Asp Gln Leu Gly Gly Asp Leu Asn Ser Thr Pro Leu His Trp Ala
           120   125   130

aca aga caa ggc cat cta tcc atg gtt gtg caa cta atg aaa tat ggt   548
Thr Arg Gln Gly His Leu Ser Met Val Val Gln Leu Met Lys Tyr Gly
         135   140   145

gca gat cct tca tta att gat gga gaa gga tgt agc tgt att cat ctg   596
Ala Asp Pro Ser Leu Ile Asp Gly Glu Gly Cys Ser Cys Ile His Leu
        150   155   160

gct gct cag ttc gga cat acc tca att gtt gct tat ctc ata gca aaa   644
Ala Ala Gln Phe Gly His Thr Ser Ile Val Ala Tyr Leu Ile Ala Lys
       165   170   175

gga cag gat gta gat atg atg gat cag aat gga atg acg cct tta atg   692
Gly Gln Asp Val Asp Met Met Asp Gln Asn Gly Met Thr Pro Leu Met
180   185   190   195

tgg gca gca tat aga aca cat agt gtg gat cca act aga ttg ctt tta   740
Trp Ala Ala Tyr Arg Thr His Ser Val Asp Pro Thr Arg Leu Leu Leu
         200   205   210

aca ttc aat gtt tca gtt aac ctt ggt gac aag tat cac aaa aac act   788
Thr Phe Asn Val Ser Val Asn Leu Gly Asp Lys Tyr His Lys Asn Thr
        215   220   225

gct ctg cat tgg gca gtg cta gca ggg aat acc aca gtc att agc ctt   836
Ala Leu His Trp Ala Val Leu Ala Gly Asn Thr Thr Val Ile Ser Leu
        230   235   240

ctt ctg gaa gct gga gct aat gtt gat gcc cag aat atc aag ggc gaa   884
Leu Leu Glu Ala Gly Ala Asn Val Asp Ala Gln Asn Ile Lys Gly Glu
       245   250   255

tca gcg ctt gat ttg gca aaa cag aga aaa aat gtg tgg atg atc aac   932
Ser Ala Leu Asp Leu Ala Lys Gln Arg Lys Asn Val Trp Met Ile Asn
260   265   270   275

cac tta caa gag gca agg caa gca aaa gga tat gac aat ccg tcc ttc   980
His Leu Gln Glu Ala Arg Gln Ala Lys Gly Tyr Asp Asn Pro Ser Phe

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                 280                    285                    290
ctt aga aag ctg aaa gct gat aag gaa ttt cgg cag aaa gta atg tta        1028
Leu Arg Lys Leu Lys Ala Asp Lys Glu Phe Arg Gln Lys Val Met Leu
            295                    300                    305

gga act cct ttc cta gtt att tgg ctg gtt ggg ttt ata gca gac cta        1076
Gly Thr Pro Phe Leu Val Ile Trp Leu Val Gly Phe Ile Ala Asp Leu
            310                    315                    320

aat att gat tct tgg ctc att aaa ggg cta atg tat ggt ggt gtt tgg        1124
Asn Ile Asp Ser Trp Leu Ile Lys Gly Leu Met Tyr Gly Gly Val Trp
            325                    330                    335

gct aca gta cag ttt ctt tca aaa tcc ttt ttc gat cat tca atg cat        1172
Ala Thr Val Gln Phe Leu Ser Lys Ser Phe Phe Asp His Ser Met His
340                    345                    350                    355

agt gca ttg ccc ctt ggg ata tat ttg gca acc aaa ttc tgg atg tat        1220
Ser Ala Leu Pro Leu Gly Ile Tyr Leu Ala Thr Lys Phe Trp Met Tyr
                    360                    365                    370

gtg acg tgg ttc ttc tgg ttt tgg aat gat ctc aac ttt tta ttt atc        1268
Val Thr Trp Phe Phe Trp Phe Trp Asn Asp Leu Asn Phe Leu Phe Ile
                375                    380                    385

cat ctt cca ttc ctt gcc aat agt gtt gca ctt ttc tac aat ttt gga        1316
His Leu Pro Phe Leu Ala Asn Ser Val Ala Leu Phe Tyr Asn Phe Gly
            390                    395                    400

aaa tct tgg aaa tca gat cca ggg att att aaa gca aca gaa gag caa        1364
Lys Ser Trp Lys Ser Asp Pro Gly Ile Ile Lys Ala Thr Glu Glu Gln
            405                    410                    415

aag aaa aag aca ata gtt gaa ctt gca gag aca gga agt ctg gac ctc        1412
Lys Lys Lys Thr Ile Val Glu Leu Ala Glu Thr Gly Ser Leu Asp Leu
420                    425                    430                    435

agt ata ttc tgc agt acc tgt ttg ata cga aaa ccg gtg agg tcc aaa        1460
Ser Ile Phe Cys Ser Thr Cys Leu Ile Arg Lys Pro Val Arg Ser Lys
                440                    445                    450

cat tgt ggt gtg tgc aac cgc tgt ata gca aaa ttt gat cat cat tgc        1508
His Cys Gly Val Cys Asn Arg Cys Ile Ala Lys Phe Asp His His Cys
                455                    460                    465

cca tgg gtg ggt aac tgt gta ggt gca ggc aac cat aga tat ttt atg        1556
Pro Trp Val Gly Asn Cys Val Gly Ala Gly Asn His Arg Tyr Phe Met
                470                    475                    480

ggc tac cta ttc ttc ttg ctt ttt atg atc tgc tgg atg att tat ggt        1604
Gly Tyr Leu Phe Phe Leu Leu Phe Met Ile Cys Trp Met Ile Tyr Gly
                485                    490                    495

tgt ata tct tac tgg gga ctc cac tgt gag acc act tac acc aag gat        1652
Cys Ile Ser Tyr Trp Gly Leu His Cys Glu Thr Thr Tyr Thr Lys Asp
500                    505                    510                    515
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110

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gga ttt tgg aca tac att act cag att gcc acg tgt tca cct tgg atg   1700
Gly Phe Trp Thr Tyr Ile Thr Gln Ile Ala Thr Cys Ser Pro Trp Met
                520                 525                 530

ttt tgg atg ttc ctg aac agt gtt ttc cac ttc atg tgg gtg gct gta   1748
Phe Trp Met Phe Leu Asn Ser Val Phe His Phe Met Trp Val Ala Val
                535                 540                 545

tta ctc atg tgt cag atg tac cag ata tca tgt tta ggt att act aca   1796
Leu Leu Met Cys Gln Met Tyr Gln Ile Ser Cys Leu Gly Ile Thr Thr
                550                 555                 560

aat gaa aga atg aat gcc agg aga tac aag cac ttt aaa gtc aca aca   1844
Asn Glu Arg Met Asn Ala Arg Arg Tyr Lys His Phe Lys Val Thr Thr
                565                 570                 575

acg tct att gaa agc cca ttc aac cat gga tgt gta aga aat att ata   1892
Thr Ser Ile Glu Ser Pro Phe Asn His Gly Cys Val Arg Asn Ile Ile
580                 585                 590                 595

gac ttc ttt gaa ttt cga tgc tgt ggc ctc ttt cgt cct gtt atc gtg   1940
Asp Phe Phe Glu Phe Arg Cys Cys Gly Leu Phe Arg Pro Val Ile Val
                600                 605                 610

gac tgg acc agg cag tat aca ata gaa tat gac caa ata tca gga tct   1988
Asp Trp Thr Arg Gln Tyr Thr Ile Glu Tyr Asp Gln Ile Ser Gly Ser
                615                 620                 625

ggg tac cag ctg gtg tagcgacatc ttatcctatg aagcatattg ctgagtggtg   2043
Gly Tyr Gln Leu Val
                630

cctgaaaatt gtgtctgtcc gtgtctttct cacactcgaa tccacatcct ttgaacaaga 2103

gcatgctatg tgtagggcta atggtgaatt ttacagtctt tttttcaaca cttttattaa 2163

caaaagtaaa catggacaga acacactgcc atttctggga agagtaaaga tgataaaaaa 2223

taattttaat ggttcttaat gtggaaattc acaacatact caacttttgg gttttgttct 2283

cacagtattt ttcacaaaaa aagggtaaac ttattctatt gacagacatg gtgtactgat 2343

cagaaatgtt cagttttaac taaaactaaa tttatgttat ttggctaaat gttatgatgc 2403

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attatgtaca tttcagaatg tacacataaa tactgtgatg aaaatcatgt gattgggatc 2523

tactgtgatg ttgtcttcaa aggcaggaga aaataatgtt cacaataaaa tgtgctaaca 2583

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agtcatgttt ttttgttcaa atttaaaagc cctgctaatt gcatgacaca ccacatagaa 2763
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111

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tgtatactag cagatactat ccagtgaagc ataaattaga atttaatttg atgttcaaaa 2823

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aaattctcag taatagtgat acatggatat acttccttttt aaattctcag ctgcaaaata 2943

attgtagaca aaataatggc atttaactaa agatggagca tgatctaagt acatagcaca 3003

tgtgaataaa agaaaagctg acagtatatt ctggtttcaa taaaatgacc tatcagaaag 3063

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ctgtgagagg gaatggggtg ggagatgtgg gggaatggtg gtcagactga tgacagatcc 3363

tagaccaatg taaagaatgt gtatctgtat ataaataatt tatcaaatag ttttctcttt 3423

gtgtctgtgt tagtgttttt aaagctgctc atttcatttt gtccaaccaa aaagaaaagg 3483

gagataacta atgagcttct agtgatgttc aaaattgctg ttaataggca ttatacctg 3543

caagttcact gcatgtctga tgcttggtaa aactagtctt ccctgtaaaa tgcagattac 3603

aggtattaaa gcaatctagt ggtatacccg ccccttgcct tagtaagagg agcagtgaaa 3663

tgtatatagt tgatgttcag tatttccaag taccatttttt atatagtagc ttatttgacc 3723

ataagtcaca catcaaaaaa agattaccct tagtgtatgt gtttttaatat tagaaaattg 3783

gcatatgtac tttattttttg aaaagggaag agatgggtgt ggggtggcaa tagcattgtg 3843

ccattttgtc atagaatgta aaaattggtt aactttacaa atgtcagcta gttttgacta 3903

ctaattgggg gaaattttag ataattttta aattcaaagt tatttataaa atgctagaat 3963

ttgtttttaat tttttgtatt ttgagccact tcacatgaag actcagttgc atttttatcg 4023

aatacatttt tatcaacagt taaagactat ggtggttttt tcagagtttg gctaagaatg 4083

ttgttaccat cttctttgtt tgtggtacaa tattttcagt gcaaaagaga tgtcattcag 4143

ttaaaaagac aaacctctag atgtgtaatt acatggaaaa tactagcaat gtgaatgctt 4203

ttgtagtaac catcttgtag tacctgtgaa atctataact cagaaatggt cagatggtca 4263

ggagccagct atgcagcagt ataccatctg tttaattatt ttgtaggtcc tgtgtgtgga 4323

accaactata aacccagttc taaagttgtg tatgatggtg aacctttggg aatagttctt 4383

atcaacttaa ttggatactt ttagcaaata ggaacttaat tctcagcact gaacatgaat 4443

tacttccttg gagttttttt tcattcatat ttttgttgtt tccaggaatt tatttgatat 4503
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112

taatgggcgt aaaacagcat cattgtactt aagctatgga tgtttttatt ttatattttc 4563

tttatttata actgtgccaa gtattatttt gctacttacc gtgttattct gtggaaagaa 4623

aaacctgtaa agtgtttaat aaattagccc tccttacata aattaaatgt caaaattttg 4683

taaaatatta atcagaataa atactgactc tt   4715

<210> 67
<211> 498
<212> PRT
<213> Homo sapiens

<400> 67
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Leu Val Ser Pro Asn Ser Ser His Ser His Ala Val Val Leu Ser Trp
            20   25   30

Val Arg Pro Phe Asp Gly Asn Ser Pro Ile Leu Tyr Tyr Ile Val Glu
        35   40   45

Leu Ser Glu Asn Asn Ser Pro Trp Lys Val His Leu Ser Asn Val Gly
    50   55   60

Pro Glu Met Thr Gly Val Thr Val Ser Gly Leu Thr Pro Ala Arg Thr
65   70   75   80

Tyr Gln Phe Arg Val Cys Ala Val Asn Glu Val Gly Arg Gly Gln Tyr
                85   90   95

Ser Ala Glu Thr Ser Arg Leu Met Leu Pro Glu Glu Pro Pro Ser Ala
            100   105   110

Pro Pro Lys Asn Ile Val Ala Ser Gly Arg Thr Asn Gln Ser Ile Met
        115   120   125

Val Gln Trp Gln Pro Pro Pro Glu Thr Glu His Asn Gly Val Leu Arg
    130   135   140

Gly Tyr Ile Leu Arg Tyr Arg Leu Ala Gly Leu Pro Gly Glu Tyr Gln
145   150   155   160

Gln Arg Asn Ile Thr Ser Pro Glu Val Asn Tyr Cys Leu Val Thr Asp
            165   170   175

Leu Ile Ile Trp Thr Gln Tyr Glu Ile Gln Val Ala Ala Tyr Asn Gly
            180   185   190

Ala Gly Leu Gly Val Phe Ser Arg Ala Val Thr Glu Tyr Thr Leu Gln
        195   200   205

Gly Val Pro Thr Ala Pro Pro Gln Asn Val Gln Thr Glu Ala Val Asn
    210   215   220

113

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Ser Thr Thr Ile Gln Phe Leu Trp Asn Pro Pro Pro Gln Gln Phe Ile
225                 230             235                     240

Asn Gly Ile Asn Gln Gly Tyr Lys Leu Leu Ala Trp Pro Ala Asp Ala
                245             250                 255

Pro Glu Ala Val Thr Val Val Thr Ile Ala Pro Asp Phe His Gly Val
                260                 265             270

His His Gly His Ile Thr Asn Leu Lys Lys Phe Thr Ala Tyr Phe Thr
            275             280             285

Ser Val Leu Cys Phe Thr Thr Pro Gly Asp Gly Pro Pro Ser Thr Pro
    290             295             300

Gln Leu Val Trp Thr Gln Glu Asp Lys Pro Gly Ala Val Gly His Leu
305                 310             315                     320

Ser Phe Thr Glu Ile Leu Asp Thr Ser Leu Lys Val Ser Trp Gln Glu
                325             330             335

Pro Leu Glu Lys Asn Gly Ile Ile Thr Gly Tyr Gln Ile Ser Trp Glu
            340             345             350

Val Tyr Gly Arg Asn Asp Ser Arg Leu Thr His Thr Leu Asn Ser Thr
        355             360             365

Met His Glu Tyr Lys Ile Gln Gly Leu Ser Ser Leu Thr Thr Tyr Thr
    370             375             380

Ile Asp Val Ala Ala Val Thr Ala Val Gly Thr Gly Leu Val Thr Ser
385                 390             395                     400

Ser Thr Ile Ser Ser Gly Val Pro Pro Asp Leu Pro Gly Ala Pro Ser
                405             410             415

Asn Leu Val Ile Ser Asn Ile Ser Pro Arg Ser Ala Thr Leu Gln Phe
            420             425             430

Arg Pro Gly Tyr Asp Gly Lys Thr Ser Ile Ser Arg Trp Ile Val Glu
        435             440             445

Gly Gln Met Arg Pro Glu Gly Val Gly Leu Pro Ala Glu Val Thr Gln
    450             455             460

Pro Ser His Glu Ala Gly Leu Glu Pro Ala Asn Leu Gly Ser Leu Trp
465             470             475                     480

Leu Leu Ser Leu Val Tyr Trp Cys Tyr Ser Gln Lys Leu Trp Glu Phe
                485             490             495

Ser Cys
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<210> 68

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<211> 1902
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (22)..(1515)

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                        Met Ala Arg Leu Glu Val Ile Glu Leu Pro
                         1               5                  10

cat tca cct cag aac ctc ctg gtc agc cct aat tct tcc cac agc cac    99
His Ser Pro Gln Asn Leu Leu Val Ser Pro Asn Ser Ser His Ser His
                 15                  20                  25

gcc gtg gtg ctc tct tgg gtc cgg ccc ttt gat gga aac agt cct att   147
Ala Val Val Leu Ser Trp Val Arg Pro Phe Asp Gly Asn Ser Pro Ile
             30                  35                  40

ctt tat tac atc gtg gag ctg tct gaa aac aac tct cca tgg aag gtg   195
Leu Tyr Tyr Ile Val Glu Leu Ser Glu Asn Asn Ser Pro Trp Lys Val
             45                  50                  55

cat ctg tca aac gtt ggc cct gag atg aca ggc gtc acc gtg agt ggc   243
His Leu Ser Asn Val Gly Pro Glu Met Thr Gly Val Thr Val Ser Gly
     60                  65                  70

ctg act ccg gct cgt acc tat caa ttc cgg gtg tgc gcg gtg aat gaa   291
Leu Thr Pro Ala Arg Thr Tyr Gln Phe Arg Val Cys Ala Val Asn Glu
 75                  80                  85                  90

gtg ggc agg ggc cag tac agt gcc gag aca agc agg ttg atg cta cct   339
Val Gly Arg Gly Gln Tyr Ser Ala Glu Thr Ser Arg Leu Met Leu Pro
                 95                 100                 105

gaa gaa cca ccc agt gct ccc ccg aaa aat ata gtg gcc agt ggg cgg   387
Glu Glu Pro Pro Ser Ala Pro Pro Lys Asn Ile Val Ala Ser Gly Arg
             110                 115                 120

act aat cag tcc att atg gtc cag tgg cag cca ccc cca gaa aca gag   435
Thr Asn Gln Ser Ile Met Val Gln Trp Gln Pro Pro Pro Glu Thr Glu
             125                 130                 135

cac aac ggg gtg ttg cgt gga tac atc ctc agg tac cgc ctg gct ggc   483
His Asn Gly Val Leu Arg Gly Tyr Ile Leu Arg Tyr Arg Leu Ala Gly
             140                 145                 150

ctt ccc gga gag tac cag cag cgg aac atc acc agc ccg gag gtg aac   531
Leu Pro Gly Glu Tyr Gln Gln Arg Asn Ile Thr Ser Pro Glu Val Asn
155                 160                 165                 170

tac tgc ctg gtg aca gac ctg atc atc tgg aca cag tat gag ata cag   579
Tyr Cys Leu Val Thr Asp Leu Ile Ile Trp Thr Gln Tyr Glu Ile Gln
                 175                 180                 185
```

115

gtg gcg gcg tac aac ggg gcc ggt ctg ggc gtc ttc agc agg gca gtg   627
Val Ala Ala Tyr Asn Gly Ala Gly Leu Gly Val Phe Ser Arg Ala Val
                190   195   200

acc gag tac acc ttg cag gga gtg ccc acc gcg ccc ccg cag aac gtg   675
Thr Glu Tyr Thr Leu Gln Gly Val Pro Thr Ala Pro Pro Gln Asn Val
            205   210   215

cag acg gaa gcc gtg aac tcc acc acc att cag ttc ctg tgg aac cct   723
Gln Thr Glu Ala Val Asn Ser Thr Thr Ile Gln Phe Leu Trp Asn Pro
    220   225   230

ccg cct cag cag ttt atc aat ggc atc aac cag gga tac aag ctt ctg   771
Pro Pro Gln Gln Phe Ile Asn Gly Ile Asn Gln Gly Tyr Lys Leu Leu
235   240   245   250

gca tgg ccg gca gat gcc ccc gag gct gtc act gtg gtc act att gcc   819
Ala Trp Pro Ala Asp Ala Pro Glu Ala Val Thr Val Val Thr Ile Ala
                255   260   265

cca gat ttc cac gga gtc cac cat gga cac ata acg aac ctg aag aag   867
Pro Asp Phe His Gly Val His His Gly His Ile Thr Asn Leu Lys Lys
                270   275   280

ttt acc gcc tac ttc act tcc gtt ctg tgc ttc acc acc cct ggg gac   915
Phe Thr Ala Tyr Phe Thr Ser Val Leu Cys Phe Thr Thr Pro Gly Asp
            285   290   295

ggg cct ccc agc aca cct cag ctg gtc tgg act cag gaa gac aaa cca   963
Gly Pro Pro Ser Thr Pro Gln Leu Val Trp Thr Gln Glu Asp Lys Pro
    300   305   310

gga gct gtg gga cat ctg agt ttc aca gag atc ttg gac aca tct ctc   1011
Gly Ala Val Gly His Leu Ser Phe Thr Glu Ile Leu Asp Thr Ser Leu
315   320   325   330

aag gtc agc tgg cag gag ccc ctg gag aaa aat ggc atc att act ggc   1059
Lys Val Ser Trp Gln Glu Pro Leu Glu Lys Asn Gly Ile Ile Thr Gly
                335   340   345

tat cag atc tct tgg gaa gtg tac ggc agg aac gac tct cgt ctc acg   1107
Tyr Gln Ile Ser Trp Glu Val Tyr Gly Arg Asn Asp Ser Arg Leu Thr
                350   355   360

cac acc ctg aac agc acg atg cac gag tac aag atc caa ggc ctc tca   1155
His Thr Leu Asn Ser Thr Met His Glu Tyr Lys Ile Gln Gly Leu Ser
            365   370   375

tct ctc acc acc tac acc atc gac gtg gcc gct gtg act gcc gtg ggc   1203
Ser Leu Thr Thr Tyr Thr Ile Asp Val Ala Ala Val Thr Ala Val Gly
    380   385   390

act ggc ctg gtg act tca tcc acc att tct tct gga gtg ccc cca gac   1251
Thr Gly Leu Val Thr Ser Ser Thr Ile Ser Ser Gly Val Pro Pro Asp
395   400   405   410

ctt cct ggt gcc cca tcc aac ctg gtc att tcc aac atc agc cct cgc   1299

116

```
Leu Pro Gly Ala Pro Ser Asn Leu Val Ile Ser Asn Ile Ser Pro Arg
            415             420             425

tcc gcc acc ctt cag ttc cgg cca ggc tat gac ggg aaa acg tcc atc   1347
Ser Ala Thr Leu Gln Phe Arg Pro Gly Tyr Asp Gly Lys Thr Ser Ile
            430             435             440

tcc agg tgg att gtt gag ggg cag atg aga cct gaa ggt gtt gga tta   1395
Ser Arg Trp Ile Val Glu Gly Gln Met Arg Pro Glu Gly Val Gly Leu
            445             450             455

cct gcc gag gtc aca cag cca agc cat gaa gcc gga ttg gag cct gca   1443
Pro Ala Glu Val Thr Gln Pro Ser His Glu Ala Gly Leu Glu Pro Ala
            460             465             470

aac ctc gga agt ctg tgg ctg ctc agc ctg gtg tat tgg tgt tac agc   1491
Asn Leu Gly Ser Leu Trp Leu Leu Ser Leu Val Tyr Trp Cys Tyr Ser
475             480             485             490

cag aaa ctt tgg gaa ttc tct tgt tagttggtta gttttactgt aattttctat   1545
Gln Lys Leu Trp Glu Phe Ser Cys
            495

aaagaattca tatcatctgt taatggcgac agttttgtt tcttcctttg aatttttat   1605

attctttctt tctcttttt gtttcttctt ctttgagtat tttgtaatct tactgggagg   1665

gctaaagcgt cttctatcat atcgaattgg gacaatgata gaagacaatc tttgtttgt   1725

cactctaaag aaattattgt aagattttat catcaggtat gacatttaca ccattgatgt   1785

aggctttta aaaaatatat ccagcctgta ttgggttaag atgattcttt tctgatcctg   1845

atttcctagg agttggtttt ttttttttta aagcataaat aaatttaatt gcatcag     1902
```

```
Met Ala Arg Leu Glu Val Ile Glu Leu Pro His Ser Pro Gln Asn Leu
  1             5              10              15

Leu Val Ser Pro Asn Ser Ser His Ser His Ala Val Val Leu Ser Trp
            20              25              30

Val Arg Pro Phe Asp Gly Asn Ser Pro Ile Leu Tyr Tyr Ile Val Glu
            35              40              45

Leu Ser Glu Asn Asn Ser Pro Trp Lys Val His Leu Ser Asn Val Gly
        50              55              60

Pro Glu Met Thr Gly Val Thr Val Ser Gly Leu Thr Pro Ala Arg Thr
65              70              75              80
```

117

```
Tyr Gln Phe Arg Val Cys Ala Val Asn Glu Val Gly Arg Gly Gln Tyr
            85                  90                  95

Ser Ala Glu Thr Ser Arg Leu Met Leu Pro Glu Glu Pro Pro Ser Ala
            100                 105                 110

Pro Pro Lys Asn Ile Val Ala Ser Gly Arg Thr Asn Gln Ser Ile Met
            115                 120                 125

Val Gln Trp Gln Pro Pro Pro Glu Thr Glu His Asn Gly Val Leu Arg
        130             135             140

Gly Tyr Ile Leu Arg Tyr Arg Leu Ala Gly Leu Pro Gly Glu Tyr Gln
145             150             155             160

Gln Arg Asn Ile Thr Ser Pro Glu Val Asn Tyr Cys Leu Val Thr Asp
                165             170             175

Leu Ile Ile Trp Thr Gln Tyr Glu Ile Gln Val Ala Ala Tyr Asn Gly
            180             185             190

Ala Gly Leu Gly Val Phe Ser Arg Ala Val Thr Glu Tyr Thr Leu Gln
            195             200             205

Gly Val Pro Thr Ala Pro Pro Gln Asn Val Gln Thr Glu Ala Val Asn
    210             215             220

Ser Thr Thr Ile Gln Phe Leu Trp Asn Pro Pro Pro Gln Gln Phe Ile
225             230             235             240

Asn Gly Ile Asn Gln Gly Tyr Lys Leu Leu Ala Trp Pro Ala Asp Ala
            245             250             255

Pro Glu Ala Val Thr Val Val Thr Ile Ala Pro Asp Phe His Gly Val
            260             265             270

His His Gly His Ile Thr Asn Leu Lys Lys Phe Thr Ala Tyr Phe Thr
    275             280             285

Ser Val Leu Cys Phe Thr Thr Pro Gly Asp Gly Pro Pro Ser Thr Pro
    290             295             300

Gln Leu Val Trp Thr Gln Glu Asp Lys Pro Gly Ala Val Gly His Leu
305             310             315             320

Ser Phe Thr Glu Ile Leu Asp Thr Ser Leu Lys Val Ser Trp Gln Glu
            325             330             335

Pro Leu Glu Lys Asn Gly Ile Ile Thr Gly Tyr Gln Ile Ser Trp Glu
            340             345             350

Val Tyr Gly Arg Asn Asp Ser Arg Leu Thr His Thr Leu Asn Ser Thr
    355             360             365

Thr His Glu Tyr Lys Ile Gln Gly Leu Ser Ser Leu Thr Thr Tyr Thr
    370             375             380
```

118

Ile Asp Val Ala Ala Val Thr Ala Val Gly Thr Gly Leu Val Thr Ser
385   390   395   400

Ser Thr Ile Ser Ser Gly Val Pro Pro Asp Leu Pro Gly Ala Pro Ser
                405   410   415

Asn Leu Val Ile Ser Asn Ile Ser Pro Arg Ser Ala Thr Leu Gln Phe
                420   425   430

Arg Pro Gly Tyr Asp Gly Lys Thr Ser Ile Ser Arg Trp Ile Val Glu
                435   440   445

Gly Gln Met Arg His Gln Gly Val Gly Leu Pro Ala Glu Val Thr Gln
        450   455   460

Pro Ser His Glu Ala Gly Leu Glu Pro Ala Asn Leu Gly Ser Leu Trp
465   470   475   480

Leu Leu Ser Leu Val Tyr Trp Cys Tyr Ser Gln Lys Leu Trp Glu Phe
                485   490   495

Ser Cys

<210> 70
<211> 1902
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (22)..(1515)

<400> 70
gaaggaggga atgactccag g atg gcc cgg ctg gaa gtg att gaa ctg cct   51
                        Met Ala Arg Leu Glu Val Ile Glu Leu Pro
                         1   5   10

cat tca cct cag aac ctc ctg gtc agc cct aat tct tcc cac agc cac   99
His Ser Pro Gln Asn Leu Leu Val Ser Pro Asn Ser Ser His Ser His
                15   20   25

gcc gtg gtg ctc tct tgg gtc cgg ccc ttt gat gga aac agt cct att   147
Ala Val Val Leu Ser Trp Val Arg Pro Phe Asp Gly Asn Ser Pro Ile
                30   35   40

ctt tat tac atc gtg gag ctg tct gaa aac aac tct cca tgg aag gtg   195
Leu Tyr Tyr Ile Val Glu Leu Ser Glu Asn Asn Ser Pro Trp Lys Val
                45   50   55

cat ctg tca aac gtt ggc cct gag atg aca ggc gtc acc gtg agt ggc   243
His Leu Ser Asn Val Gly Pro Glu Met Thr Gly Val Thr Val Ser Gly
        60   65   70

ctg act ccg gct cgt acc tat caa ttc cgg gtg tgc gcg gtg aat gaa   291
Leu Thr Pro Ala Arg Thr Tyr Gln Phe Arg Val Cys Ala Val Asn Glu

119

```
        75                      80                      85                      90

gtg ggc agg ggc cag tac agt gcc gag aca agc agg ttg atg cta cct    339
Val Gly Arg Gly Gln Tyr Ser Ala Glu Thr Ser Arg Leu Met Leu Pro
                    95                  100                 105

gaa gaa cca ccc agt gct ccc ccg aaa aat ata gtg gcc agt ggg cgg    387
Glu Glu Pro Pro Ser Ala Pro Pro Lys Asn Ile Val Ala Ser Gly Arg
                110                 115                 120

act aat cag tcc att atg gtc cag tgg cag cca ccc cca gaa aca gag    435
Thr Asn Gln Ser Ile Met Val Gln Trp Gln Pro Pro Pro Glu Thr Glu
                125                 130                 135

cac aac ggg gtg ttg cgt gga tac atc ctc agg tac cgc ctg gct ggc    483
His Asn Gly Val Leu Arg Gly Tyr Ile Leu Arg Tyr Arg Leu Ala Gly
                140                 145                 150

ctt ccc gga gag tac cag cag cgg aac atc acc agc ccg gag gtg aac    531
Leu Pro Gly Glu Tyr Gln Gln Arg Asn Ile Thr Ser Pro Glu Val Asn
155                 160                 165                 170

tac tgc ctg gtg aca gac ctg atc atc tgg aca cag tat gag ata cag    579
Tyr Cys Leu Val Thr Asp Leu Ile Ile Trp Thr Gln Tyr Glu Ile Gln
                175                 180                 185

gtg gcg gcg tac aac ggg gcc ggt ctg ggc gtc ttc agc agg gca gtg    627
Val Ala Ala Tyr Asn Gly Ala Gly Leu Gly Val Phe Ser Arg Ala Val
                190                 195                 200

acc gag tac acc ttg cag gga gtg ccc acc gcg ccc ccg cag aac gtg    675
Thr Glu Tyr Thr Leu Gln Gly Val Pro Thr Ala Pro Pro Gln Asn Val
                205                 210                 215

cag acg gaa gcc gtg aac tcc acc acc att cag ttc ctg tgg aac cct    723
Gln Thr Glu Ala Val Asn Ser Thr Thr Ile Gln Phe Leu Trp Asn Pro
                220                 225                 230

ccg cct cag cag ttt atc aat ggc atc aac cag gga tac aag ctt ctg    771
Pro Pro Gln Gln Phe Ile Asn Gly Ile Asn Gln Gly Tyr Lys Leu Leu
235                 240                 245                 250

gca tgg ccg gca gat gcc ccc gag gct gtc act gtg gtc act att gcc    819
Ala Trp Pro Ala Asp Ala Pro Glu Ala Val Thr Val Val Thr Ile Ala
                255                 260                 265

cca gat ttc cac gga gtc cac cat gga cac ata acg aac ctg aag aag    867
Pro Asp Phe His Gly Val His His Gly His Ile Thr Asn Leu Lys Lys
                270                 275                 280

ttt acc gcc tac ttc act tcc gtt ctg tgc ttc acc acc cct ggg gac    915
Phe Thr Ala Tyr Phe Thr Ser Val Leu Cys Phe Thr Thr Pro Gly Asp
                285                 290                 295

ggg cct ccc agc aca cct cag ctg gtc tgg act cag gaa gac aaa cca    963
Gly Pro Pro Ser Thr Pro Gln Leu Val Trp Thr Gln Glu Asp Lys Pro
                300                 305                 310
```

120

```
gga gct gtg gga cat ctg agt ttc aca gag atc ttg gac aca tct ctc    1011
Gly Ala Val Gly His Leu Ser Phe Thr Glu Ile Leu Asp Thr Ser Leu
315             320             325             330

aag gtc agc tgg cag gag ccc ctg gag aaa aat ggc atc att act ggc    1059
Lys Val Ser Trp Gln Glu Pro Leu Glu Lys Asn Gly Ile Ile Thr Gly
            335             340             345

tat cag atc tct tgg gaa gtg tac ggc agg aac gac tct cgt ctc acg    1107
Tyr Gln Ile Ser Trp Glu Val Tyr Gly Arg Asn Asp Ser Arg Leu Thr
            350             355             360

cac acc ctg aac agc acg acg cac gag tac aag atc caa ggc ctc tca    1155
His Thr Leu Asn Ser Thr Thr His Glu Tyr Lys Ile Gln Gly Leu Ser
            365             370             375

tct ctc acc acc tac acc atc gac gtg gcc gct gtg act gcc gtg ggc    1203
Ser Leu Thr Thr Tyr Thr Ile Asp Val Ala Ala Val Thr Ala Val Gly
            380             385             390

act ggc ctg gtg act tca tcc acc att tct tct gga gtg ccc cca gac    1251
Thr Gly Leu Val Thr Ser Ser Thr Ile Ser Ser Gly Val Pro Pro Asp
395             400             405             410

ctt cct ggt gcc cca tcc aac ctg gtc att tcc aac atc agc cct cgc    1299
Leu Pro Gly Ala Pro Ser Asn Leu Val Ile Ser Asn Ile Ser Pro Arg
                415             420             425

tcc gcc acc ctt cag ttc cgg cca ggc tat gac ggg aaa acg tcc atc    1347
Ser Ala Thr Leu Gln Phe Arg Pro Gly Tyr Asp Gly Lys Thr Ser Ile
            430             435             440

tcc agg tgg att gtt gag ggg cag atg aga cat caa ggt gtt gga tta    1395
Ser Arg Trp Ile Val Glu Gly Gln Met Arg His Gln Gly Val Gly Leu
            445             450             455

cct gcc gag gtc aca cag cca agc cat gaa gcc gga ttg gag cct gca    1443
Pro Ala Glu Val Thr Gln Pro Ser His Glu Ala Gly Leu Glu Pro Ala
        460             465             470

aac ctc gga agt ctg tgg ctg ctc agc ctg gtg tat tgg tgt tac agc    1491
Asn Leu Gly Ser Leu Trp Leu Leu Ser Leu Val Tyr Trp Cys Tyr Ser
475             480             485             490

cag aaa ctt tgg gaa ttc tct tgt tagttggtta gttttactgt aattttctat    1545
Gln Lys Leu Trp Glu Phe Ser Cys
            495

aaagaattca tatcatctgt taatggcgac agtttttgtt tcttcctttg aatttttat    1605

attctttctt tctcttttt gtttcttctt ctttgagtat tttgtaatct tactgggagg    1665

gctaaagcgt cttctatcat atcgaattgg acaatgata gaagacaatc tttgtttgt    1725

cactctaaag aaattattgt aagattttat catcaggtat gacatttaca ccattgatgt    1785
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121

aggcttttta aaaaatatat ccagcctgta ttgggttaag atgattcttt tctgatcctg 1845

atttcctagg agttggtttt ttttttttta aagcataaat aaatttaatt gcatcag   1902

<210> 71
<211> 245
<212> PRT
<213> Homo sapiens

<400> 71

```
Met Pro Val Gln Leu Ser Glu His Pro Glu Trp Asn Glu Ser Met His
 1               5                  10                  15

Ser Leu Arg Ile Ser Val Gly Gly Leu Pro Val Leu Ala Ser Met Thr
            20                  25                  30

Lys Ala Ala Asp Pro Arg Phe Arg Pro Arg Trp Lys Val Ile Leu Thr
            35                  40                  45

Phe Phe Val Gly Ala Ala Ile Leu Trp Leu Leu Cys Ser His Arg Pro
     50                  55                  60

Ala Pro Gly Arg Pro Pro Thr His Asn Ala His Asn Trp Arg Leu Gly
65                  70                  75                  80

Gln Ala Pro Ala Asn Trp Tyr Asn Asp Thr Tyr Pro Leu Ser Pro Pro
                85                  90                  95

Gln Arg Thr Pro Ala Gly Ile Arg Tyr Arg Ile Ala Val Ile Ala Asp
            100                 105                 110

Leu Asp Thr Glu Ser Arg Ala Gln Glu Glu Asn Thr Trp Phe Ser Tyr
            115                 120                 125

Leu Lys Lys Gly Tyr Leu Thr Leu Ser Asp Ser Gly Asp Lys Val Ala
     130                 135                 140

Val Glu Trp Asp Lys Asp His Gly Val Leu Glu Ser His Leu Ala Glu
145                 150                 155                 160

Lys Gly Arg Gly Met Glu Leu Ser Asp Leu Ile Val Phe Asn Gly Lys
                165                 170                 175

Leu Tyr Ser Val Asp Asp Arg Thr Gly Val Val Tyr Gln Ile Glu Gly
            180                 185                 190

Ser Lys Ala Val Pro Trp Val Ile Leu Ser Asp Gly Asp Gly Thr Val
            195                 200                 205

Glu Lys Gly Phe Lys Ala Glu Trp Leu Ala Val Arg Glu Ile Val Arg
     210                 215                 220

Lys Arg Trp Arg Leu Val Lys Gln Val Ser His Val Gly Val Leu Gly
225                 230                 235                 240

Gln Trp Ile Gln Arg
```

122

245

<210> 72
<211> 1551
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (127)..(861)

<400> 72
ggaagtcggc caccttcctc cgtcccggcc gttagcccag ccaagcccag ccaagcccag 60

ccaagccccg ccgatcgcgg gcaccggagc cagccccgca gcgggtcccg cctgtctgtc 120

```
acgctg atg ccc gtg cag ctg tct gag cac ccg gaa tgg aat gag tct       168
       Met Pro Val Gln Leu Ser Glu His Pro Glu Trp Asn Glu Ser
        1                5                  10

atg cac tcc ctc cgg atc agt gtg ggg ggc ctt cct gtg ctg gcg tcc       216
Met His Ser Leu Arg Ile Ser Val Gly Gly Leu Pro Val Leu Ala Ser
 15                  20                  25                  30

atg acc aag gcc gcg gac ccc cgc ttc cgc ccc cgc tgg aag gtg atc       264
Met Thr Lys Ala Ala Asp Pro Arg Phe Arg Pro Arg Trp Lys Val Ile
                35                  40                  45

ctg acg ttc ttt gtg ggt gct gcc atc ctc tgg ctg ctc tgc tcc cac       312
Leu Thr Phe Phe Val Gly Ala Ala Ile Leu Trp Leu Leu Cys Ser His
                50                  55                  60

cgc ccg gcc ccc ggc agg ccc ccc acc cac aat gca cac aac tgg agg       360
Arg Pro Ala Pro Gly Arg Pro Pro Thr His Asn Ala His Asn Trp Arg
            65                  70                  75

ctc ggc cag gcg ccc gcc aac tgg tac aat gac acc tac ccc ctg tct       408
Leu Gly Gln Ala Pro Ala Asn Trp Tyr Asn Asp Thr Tyr Pro Leu Ser
        80                  85                  90

ccc cca caa agg aca ccg gct ggg att cgg tat cga atc gca gtt atc       456
Pro Pro Gln Arg Thr Pro Ala Gly Ile Arg Tyr Arg Ile Ala Val Ile
 95                 100                 105                 110

gca gac ctg gac aca gag tca agg gcc caa gag gaa aac acc tgg ttc       504
Ala Asp Leu Asp Thr Glu Ser Arg Ala Gln Glu Glu Asn Thr Trp Phe
                115                 120                 125

agt tac ctg aaa aag ggc tac ctg acc ctg tca gac agt ggg gac aag       552
Ser Tyr Leu Lys Lys Gly Tyr Leu Thr Leu Ser Asp Ser Gly Asp Lys
                130                 135                 140

gtg gcc gtg gaa tgg gac aaa gac cat ggg gtc ctg gag tcc cac ctg       600
Val Ala Val Glu Trp Asp Lys Asp His Gly Val Leu Glu Ser His Leu
            145                 150                 155
```

```
gcg gag aag ggg aga ggc atg gag cta tcc gac ctg att gtt ttc aat    648
Ala Glu Lys Gly Arg Gly Met Glu Leu Ser Asp Leu Ile Val Phe Asn
    160             165             170

ggg aaa ctc tac tcc gtg gat gac cgg acg ggg gtc gtc tac cag atc    696
Gly Lys Leu Tyr Ser Val Asp Asp Arg Thr Gly Val Val Tyr Gln Ile
175             180             185             190

gaa ggc agc aaa gcc gtg ccc tgg gtg att ctg tcc gac ggc gac ggc    744
Glu Gly Ser Lys Ala Val Pro Trp Val Ile Leu Ser Asp Gly Asp Gly
            195             200             205

acc gtg gag aaa ggc ttc aag gcc gaa tgg ctg gca gtg cgg gag att    792
Thr Val Glu Lys Gly Phe Lys Ala Glu Trp Leu Ala Val Arg Glu Ile
            210             215             220

gta agg aag cgg tgg cgg ctg gtg aag caa gtc tca cat gtc ggc gtt    840
Val Arg Lys Arg Trp Arg Leu Val Lys Gln Val Ser His Val Gly Val
            225             230             235

ctt ggc caa tgg ata caa aga taaagaaaat gttgcctttt tctaggaact       891
Leu Gly Gln Trp Ile Gln Arg
            240             245

gtcagaaatc ctcatgcctt tcaagacttc tgtgaatgac ttgaattttt tattccctgc  951

ctagggtctg tgaacgaggc ctgtctcttc cctggggttt ctttccatgg cctttatttc  1011

tcctcttcca gtgggagttt tgcaggctct tctctgtgga aacttcacga gcgttggctg  1071

ggcctcggct tcgctggagt gtactccagg gtgaaggcag agtgggattt gagacccagg  1131

tagtggagga agcgaaggaa gtgaacgctg aatgtgacgc atttctgaag agctcagctg  1191

tcaccgggca tagcctggaa gccccaagtc tgttctgact ttgcctggct gtctccttga  1251

cccgcctcct agatcattgt ccttgatgtc caggctgggt catttaaaat agagatgcaa  1311

tcaggaaggt tgggggactt gggactgtgg ctgaattgag accttgctga tgtattcatg  1371

tcagcacctg agtcacagcc caggtgcccg gaagcagcct cttcgcatag gcagtgattt  1431

gcgattactt taaagctcac cttttttctt cccctctctg ttcgctgctg tcagcataat  1491

gattgtgttc cttccctatg ggatccatct gttttgtaaa caataaagcg tctgagggag  1551
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<210> 73
<211> 352
<212> PRT
<213> Homo sapiens

<400> 73

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Met Glu Ser Gly Gly Arg Pro Ser Leu Cys Gln Phe Ile Leu Leu Gly
 1               5              10                  15

Thr Thr Ser Val Val Thr Ala Ala Leu Tyr Ser Val Tyr Arg Gln Lys
```

124

```
                 20                      25                      30
Ala Arg Val Ser Gln Glu Leu Lys Gly Ala Lys Lys Val His Leu Gly
        35                  40                  45

Glu Asp Leu Lys Ser Ile Leu Ser Glu Ala Pro Gly Lys Cys Val Pro
        50                  55                  60

Tyr Ala Val Ile Glu Gly Ala Val Arg Ser Val Lys Glu Thr Leu Asn
65                      70                  75                  80

Ser Gln Phe Val Glu Asn Cys Lys Gly Val Ile Gln Arg Leu Thr Leu
                85                  90                      95

Gln Glu His Lys Met Val Trp Asn Arg Thr Thr His Leu Trp Asn Asp
                100                 105                 110

Cys Ser Lys Ile Ile His Gln Arg Thr Asn Thr Val Pro Phe Asp Leu
                115                 120                 125

Val Pro His Glu Asp Gly Val Asp Val Ala Val Arg Val Leu Lys Pro
        130                 135                 140

Leu Asp Ser Val Asp Leu Gly Leu Glu Thr Val Tyr Glu Lys Phe His
145                 150                 155                 160

Pro Ser Ile Gln Ser Phe Thr Asp Val Ile Gly His Tyr Ile Ser Gly
                165                 170                 175

Glu Arg Pro Lys Gly Ile Gln Glu Thr Glu Glu Met Leu Lys Val Gly
                180                 185                 190

Ala Thr Leu Thr Gly Val Gly Glu Leu Val Leu Asp Asn Asn Ser Val
                195                 200                 205

Arg Leu Gln Pro Pro Lys Gln Gly Met Gln Tyr Tyr Leu Ser Ser Gln
        210                 215                 220

Asp Phe Asp Ser Leu Leu Gln Arg Gln Glu Ser Ser Val Arg Leu Trp
225                 230                 235                 240

Lys Val Leu Ala Leu Val Phe Gly Phe Ala Thr Cys Ala Thr Leu Phe
                245                 250                 255

Phe Ile Leu Arg Lys Gln Tyr Leu Gln Arg Gln Glu Arg Leu Arg Leu
                260                 265                 270

Lys Gln Met Gln Glu Glu Phe Gln Glu His Glu Ala Gln Leu Leu Ser
                275                 280                 285

Arg Ala Lys Pro Glu Asp Arg Glu Ser Leu Lys Ser Ala Cys Val Val
        290                 295                 300

Cys Leu Ser Ser Phe Lys Ser Cys Val Phe Leu Glu Cys Gly His Val
305                 310                 315                 320

Cys Ser Cys Thr Glu Cys Tyr Arg Ala Leu Pro Glu Pro Lys Lys Cys
```

125

```
             325               330               335
Pro Ile Cys Arg Gln Ala Ile Thr Arg Val Ile Pro Pro Tyr Asn Ser
         340               345               350
```

<210> 74
<211> 2401
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (103)..(1158)

<400> 74

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ttaggccggg ggggtgcggt cctggtcgga aggaggtgga gagtcggggg tcaccaggcc  60

tatccttggc gccacagtcg gccaccgggg ctcgccgccg tc atg gag agc gga  114
                                               Met Glu Ser Gly
                                                1

ggg cgg ccc tcg ctg tgc cag ttc atc ctc ctg ggc acc acc tct gtg  162
Gly Arg Pro Ser Leu Cys Gln Phe Ile Leu Leu Gly Thr Thr Ser Val
 5                  10                  15                  20

gtc acc gcc gcc ctg tac tcc gtg tac cgg cag aag gcc cgg gtc tcc  210
Val Thr Ala Ala Leu Tyr Ser Val Tyr Arg Gln Lys Ala Arg Val Ser
                 25                  30                  35

caa gag ctc aag gga gct aaa aaa gtt cat ttg ggt gaa gat tta aag  258
Gln Glu Leu Lys Gly Ala Lys Lys Val His Leu Gly Glu Asp Leu Lys
                 40                  45                  50

agt att ctt tca gaa gct cca gga aaa tgc gtg cct tat gct gtt ata  306
Ser Ile Leu Ser Glu Ala Pro Gly Lys Cys Val Pro Tyr Ala Val Ile
             55                  60                  65

gaa gga gct gtg cgg tct gtt aaa gaa acg ctt aac agc cag ttt gtg  354
Glu Gly Ala Val Arg Ser Val Lys Glu Thr Leu Asn Ser Gln Phe Val
         70                  75                  80

gaa aac tgc aag ggg gta att cag cgg ctg aca ctt cag gag cac aag  402
Glu Asn Cys Lys Gly Val Ile Gln Arg Leu Thr Leu Gln Glu His Lys
 85                  90                  95                  100

atg gtg tgg aat cga acc acc cac ctt tgg aat gat tgc tca aag atc  450
Met Val Trp Asn Arg Thr Thr His Leu Trp Asn Asp Cys Ser Lys Ile
                 105                 110                 115

att cat cag agg acc aac aca gtg ccc ttt gac ctg gtg ccc cac gag  498
Ile His Gln Arg Thr Asn Thr Val Pro Phe Asp Leu Val Pro His Glu
                 120                 125                 130

gat ggc gtg gat gtg gct gtg cga gtg ctg aag ccc ctg gac tca gtg  546
Asp Gly Val Asp Val Ala Val Arg Val Leu Lys Pro Leu Asp Ser Val
             135                 140                 145
```

126

```
gat ctg ggt cta gag act gtg tat gag aag ttc cac ccc tcg att cag    594
Asp Leu Gly Leu Glu Thr Val Tyr Glu Lys Phe His Pro Ser Ile Gln
    150                 155                 160

tcc ttc acc gat gtc atc ggc cac tac atc agc ggt gag cgg ccc aaa    642
Ser Phe Thr Asp Val Ile Gly His Tyr Ile Ser Gly Glu Arg Pro Lys
165                 170                 175                 180

ggc atc caa gag acc gag gag atg ctg aag gtg ggg gcc acc ctc aca    690
Gly Ile Gln Glu Thr Glu Glu Met Leu Lys Val Gly Ala Thr Leu Thr
                185                 190                 195

ggg gtt ggc gaa ctg gtc ctg gac aac aac tct gtc cgc ctg cag ccg    738
Gly Val Gly Glu Leu Val Leu Asp Asn Asn Ser Val Arg Leu Gln Pro
            200                 205                 210

ccc aaa caa ggc atg cag tac tat cta agc agc cag gac ttc gac agc    786
Pro Lys Gln Gly Met Gln Tyr Tyr Leu Ser Ser Gln Asp Phe Asp Ser
        215                 220                 225

ctg ctg cag agg cag gag tcg agc gtc agg ctc tgg aag gtg ctg gcg    834
Leu Leu Gln Arg Gln Glu Ser Ser Val Arg Leu Trp Lys Val Leu Ala
    230                 235                 240

ctg gtt ttt ggc ttt gcc aca tgt gcc acc ctc ttc ttc att ctc cgg    882
Leu Val Phe Gly Phe Ala Thr Cys Ala Thr Leu Phe Phe Ile Leu Arg
245                 250                 255                 260

aag cag tat ctg cag cgg cag gag cgc ctg cgc ctc aag cag atg cag    930
Lys Gln Tyr Leu Gln Arg Gln Glu Arg Leu Arg Leu Lys Gln Met Gln
                265                 270                 275

gag gag ttc cag gag cat gag gcc cag ctg ctg agc cga gcc aag cct    978
Glu Glu Phe Gln Glu His Glu Ala Gln Leu Leu Ser Arg Ala Lys Pro
                280                 285                 290

gag gac agg gag agt ctg aag agc gcc tgt gta gtg tgt ctg agc agc   1026
Glu Asp Arg Glu Ser Leu Lys Ser Ala Cys Val Val Cys Leu Ser Ser
            295                 300                 305

ttc aag tcc tgc gtc ttt ctg gag tgt ggg cac gtt tgt tcc tgc acc   1074
Phe Lys Ser Cys Val Phe Leu Glu Cys Gly His Val Cys Ser Cys Thr
        310                 315                 320

gag tgc tac cgc gcc ttg cca gag ccc aag aag tgc cct atc tgc aga   1122
Glu Cys Tyr Arg Ala Leu Pro Glu Pro Lys Lys Cys Pro Ile Cys Arg
325                 330                 335                 340

cag gcg atc acc cgg gtg ata ccc ccg tac aac agc taatagtttg        1168
Gln Ala Ile Thr Arg Val Ile Pro Pro Tyr Asn Ser
                345                 350

gaagccgcac agcttgacct ggaagcaccc ctgccccctt ttcagggatt tttatctcga 1228

ggcctttgga ggagcagtgg tgggggtagc tgtcacctcc aggtatgatt gagggaggaa 1288
```

127

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tcgggtagaa actctccaga cccatgcctc caatggcagg atgctgcctt tcccacctga 1348

gaggggaccc tgtccatgtg cagcctcatc agagcctcac cctgggagga tgccgtggcg 1408

tctcctccca ggagccagat cagtgcgagt gtgactgaaa atgcctcatc acttaagcac 1468

caaagccagt gatcagcagc tcttctgttc ctgtgtcttc tgttttttc tggtgaatcg 1528

ttgcttgctg tggacttggt ggaggactca gaggggagga aaggctgggc cccgagtaca 1588

acggatgcct tgggtgctgc ctccgaagag actctgccgc agcttttctt ctttttcctc 1648

atgccccggg aaacagtctt tcttcagaat tgtcaggctg ggcaggtcaa cttgtgttcc 1708

tttcccctca cctgcttgcc tccttaacgc ctgcacgtgt gtgtagagga caaaagaaag 1768

tgaagtcagc acatccgctt ctgcccagat ggtcggggcc ccgggcaaca gattgaagag 1828

agatcatgtg aagggcagtt ggtcaggcag gcctcctggt ttcgccactg gccctgattt 1888

gaactcctgc cacttgggag agctcggggt ggtccctggt tttccctcct ggagaatgag 1948

gcgcagaggc ctcgcctcct gaaggacgca gtgtggatgc cactggccta gtgtcctggc 2008

ctcacagctt ccttgcaagg ctgtcacaag gaaaagcagc cggctggcac cctgagcata 2068

tgccctcttg gggctccctc atccagcccg tcgcagcttt gacatcttgg tgtactcatg 2128

tcgcttctcc ttgtgttacc ccctcccagt attaccattt gccctcacc tgcccttggt 2188

gagccttta gtgcaagaca gatggggctg ttttccccca cctctgagta gttggaggtc 2248

acatacacag ctcttttttt attgcccttt tctgcctctg aatgttcatc tctcgtcctc 2308

ctttgtgcag gcgaggaagg ggtgccctca ggggccgaca ctagtgtgat gcagtgtcca 2368

gtgtgaacag cagaaattaa acatgttgca acc                            2401
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<210> 75
<211> 352
<212> PRT
<213> Homo sapiens

<400> 75
Met Glu Ser Gly Gly Arg Pro Ser Leu Cys Gln Phe Ile Leu Leu Gly
1               5                   10                  15

Thr Thr Ser Val Val Thr Ala Ala Leu Tyr Ser Val Tyr Arg Gln Lys
            20                  25                  30

Ala Arg Val Ser Gln Glu Leu Lys Gly Ala Lys Lys Val His Leu Gly
        35                  40                  45

Glu Asp Leu Lys Ser Ile Leu Ser Glu Ala Pro Gly Lys Cys Val Pro
    50                  55                  60
```

Tyr Ala Val Ile Glu Gly Ala Val Arg Ser Val Lys Glu Thr Leu Asn
65   70   75   80

Ser Gln Phe Val Glu Asn Cys Lys Gly Val Ile Gln Arg Leu Thr Leu
               85   90   95

Gln Glu His Lys Met Val Trp Asn Arg Thr Thr His Leu Trp Asn Asp
          100   105   110

Cys Ser Lys Ile Ile His Gln Arg Thr Asn Thr Val Pro Phe Asp Leu
          115   120   125

Val Pro His Glu Asp Gly Val Asp Val Ala Val Arg Val Leu Lys Pro
130   135   140

Leu Asp Ser Val Asp Leu Gly Leu Glu Thr Val Tyr Glu Lys Phe His
145   150   155   160

Pro Ser Ile Gln Ser Phe Thr Asp Val Ile Gly His Tyr Ile Ser Gly
          165   170   175

Glu Arg Pro Lys Gly Ile Gln Glu Thr Glu Glu Met Leu Lys Val Gly
          180   185   190

Ala Thr Leu Thr Gly Val Gly Glu Leu Val Leu Asp Asn Asn Ser Val
          195   200   205

Arg Leu Gln Pro Pro Lys Gln Gly Met Gln Tyr Tyr Leu Ser Ser Gln
210   215   220

Asp Phe Asp Ser Leu Leu Gln Arg Gln Glu Ser Ser Val Arg Leu Trp
225   230   235   240

Lys Val Leu Ala Leu Val Phe Gly Phe Ala Thr Cys Ala Thr Leu Phe
          245   250   255

Phe Ile Leu Arg Lys Gln Tyr Leu Gln Arg Gln Glu Arg Leu Arg Leu
          260   265   270

Lys Gln Met Gln Glu Glu Phe Gln Glu His Glu Ala Gln Leu Leu Ser
          275   280   285

Arg Ala Lys Pro Glu Asp Arg Glu Ser Leu Lys Ser Ala Cys Val Val
290   295   300

Cys Leu Ser Ser Phe Lys Ser Cys Val Phe Leu Glu Cys Gly His Val
305   310   315   320

Cys Ser Cys Thr Glu Cys Tyr Arg Ala Leu Pro Glu Pro Lys Lys Cys
          325   330   335

Pro Ile Cys Arg Gln Ala Ile Thr Arg Val Ile Pro Leu Tyr Asn Ser
          340   345   350

<210> 76
<211> 2401

<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (103)..(1158)

<400> 76
ttaggccggg ggggtgcggt cctggtcgga aggaggtgga gagtcggggg tcaccaggcc 60

tatccttggc gccacagtcg gccaccgggg ctcgccgccg tc atg gag agc gga   114
                                               Met Glu Ser Gly
                                                1

ggg cgg ccc tcg ctg tgc cag ttc atc ctc ctg ggc acc acc tct gtg   162
Gly Arg Pro Ser Leu Cys Gln Phe Ile Leu Leu Gly Thr Thr Ser Val
 5   10   15   20

gtc acc gcc gcc ctg tac tcc gtg tac cgg cag aag gcc cgg gtc tcc   210
Val Thr Ala Ala Leu Tyr Ser Val Tyr Arg Gln Lys Ala Arg Val Ser
                25   30   35

caa gag ctc aag gga gct aaa aaa gtt cat ttg ggt gaa gat tta aag   258
Gln Glu Leu Lys Gly Ala Lys Lys Val His Leu Gly Glu Asp Leu Lys
            40   45   50

agt att ctt tca gaa gct cca gga aaa tgc gtg cct tat gct gtt ata   306
Ser Ile Leu Ser Glu Ala Pro Gly Lys Cys Val Pro Tyr Ala Val Ile
            55   60   65

gaa gga gct gtg cgg tct gtt aaa gaa acg ctt aac agc cag ttt gtg   354
Glu Gly Ala Val Arg Ser Val Lys Glu Thr Leu Asn Ser Gln Phe Val
        70   75   80

gaa aac tgc aag ggg gta att cag cgg ctg aca ctt cag gag cac aag   402
Glu Asn Cys Lys Gly Val Ile Gln Arg Leu Thr Leu Gln Glu His Lys
 85   90   95   100

atg gtg tgg aat cga acc acc cac ctt tgg aat gat tgc tca aag atc   450
Met Val Trp Asn Arg Thr Thr His Leu Trp Asn Asp Cys Ser Lys Ile
                105   110   115

att cat cag agg acc aac aca gtg ccc ttt gac ctg gtg ccc cac gag   498
Ile His Gln Arg Thr Asn Thr Val Pro Phe Asp Leu Val Pro His Glu
                120   125   130

gat ggc gtg gat gtg gct gtg cga gtg ctg aag ccc ctg gac tca gtg   546
Asp Gly Val Asp Val Ala Val Arg Val Leu Lys Pro Leu Asp Ser Val
            135   140   145

gat ctg ggt cta gag act gtg tat gag aag ttc cac ccc tcg att cag   594
Asp Leu Gly Leu Glu Thr Val Tyr Glu Lys Phe His Pro Ser Ile Gln
            150   155   160

tcc ttc acc gat gtc atc ggc cac tac atc agc ggt gag cgg ccc aaa   642
Ser Phe Thr Asp Val Ile Gly His Tyr Ile Ser Gly Glu Arg Pro Lys
165   170   175   180

130

```
ggc atc caa gag acc gag gag atg ctg aag gtg ggg gcc acc ctc aca    690
Gly Ile Gln Glu Thr Glu Glu Met Leu Lys Val Gly Ala Thr Leu Thr
            185             190                 195

ggg gtt ggc gaa ctg gtc ctg gac aac aac tct gtc cgc ctg cag ccg    738
Gly Val Gly Glu Leu Val Leu Asp Asn Asn Ser Val Arg Leu Gln Pro
            200             205                 210

ccc aaa caa ggc atg cag tac tat cta agc agc cag gac ttc gac agc    786
Pro Lys Gln Gly Met Gln Tyr Tyr Leu Ser Ser Gln Asp Phe Asp Ser
            215             220                 225

ctg ctg cag agg cag gag tcg agc gtc agg ctc tgg aag gtg ctg gcg    834
Leu Leu Gln Arg Gln Glu Ser Ser Val Arg Leu Trp Lys Val Leu Ala
            230             235                 240

ctg gtt ttt ggc ttt gcc aca tgt gcc acc ctc ttc ttc att ctc cgg    882
Leu Val Phe Gly Phe Ala Thr Cys Ala Thr Leu Phe Phe Ile Leu Arg
245             250             255                 260

aag cag tat ctg cag cgg cag gag cgc ctg cgc ctc aag cag atg cag    930
Lys Gln Tyr Leu Gln Arg Gln Glu Arg Leu Arg Leu Lys Gln Met Gln
                265             270                 275

gag gag ttc cag gag cat gag gcc cag ctg ctg agc cga gcc aag cct    978
Glu Glu Phe Gln Glu His Glu Ala Gln Leu Leu Ser Arg Ala Lys Pro
            280             285                 290

gag gac agg gag agt ctg aag agc gcc tgt gta gtg tgt ctg agc agc    1026
Glu Asp Arg Glu Ser Leu Lys Ser Ala Cys Val Val Cys Leu Ser Ser
            295             300                 305

ttc aag tcc tgc gtc ttt ctg gag tgt ggg cac gtt tgt tcc tgc acc    1074
Phe Lys Ser Cys Val Phe Leu Glu Cys Gly His Val Cys Ser Cys Thr
            310             315                 320

gag tgc tac cgc gcc ttg cca gag ccc aag aag tgc cct atc tgc aga    1122
Glu Cys Tyr Arg Ala Leu Pro Glu Pro Lys Lys Cys Pro Ile Cys Arg
325             330             335                 340

cag gcg atc acc cgg gtg ata ccc ctg tac aac agc taatagtttg    1168
Gln Ala Ile Thr Arg Val Ile Pro Leu Tyr Asn Ser
            345             350
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gaagccgcac agcttgacct ggaagcaccc ctgcccctt ttcagggatt tttatctcga    1228

ggcctttgga ggagcagtgg tgggggtagc tgtcacctcc aggtatgatt gagggaggaa    1288

tcgggtagaa actctccaga cccatgcctc caatggcagg atgctgcctt tcccacctga    1348

gaggggaccc tgtccatgtg cagcctcatc agagcctcac cctgggagga tgccgtggcg    1408

tctcctccca ggagccagat cagtgcgagt gtgactgaaa atgcctcatc acttaagcac    1468

caaagccagt gatcagcagc tcttctgttc ctgtgtcttc tgtttttttc tggtgaatcg    1528
```

131

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ttgcttgctg tggacttggt ggaggactca gaggggagga aaggctgggc cccgagtaca 1588

acggatgcct tgggtgctgc ctccgaagag actctgccgc agcttttctt cttttttcctc 1648

atgccccggg aaacagtctt tcttcagaat tgtcaggctg ggcaggtcaa cttgtgttcc 1708

tttcccctca cctgcttgcc tccttaacgc ctgcacgtgt gtgtagagga caaaagaaag 1768

tgaagtcagc acatccgctt ctgcccagat ggtcggggcc ccgggcaaca gattgaagag 1828

agatcatgtg aagggcagtt ggtcaggcag gcctcctggt ttcgccactg gccctgattt 1888

gaactcctgc cacttgggag agctcggggt ggtccctggt tttccctcct ggagaatgag 1948

gcgcagaggc ctcgcctcct gaaggacgca gtgtggatgc cactggccta gtgtcctggc 2008

ctcacagctt ccttgcaagg ctgtcacaag gaaaagcagc cggctggcac cctgagcata 2068

tgccctcttg gggctccctc atccagcccg tcgcagcttt gacatcttgg tgtactcatg 2128

tcgcttctcc ttgtgttacc ccctcccagt attaccattt gcccctcacc tgcccttggt 2188

gagcctttta gtgcaagaca gatggggctg ttttcccccca cctctgagta gttggaggtc 2248

acatacacag ctctttttttt attgcccttt tctgcctctg aatgttcatc tctcgtcctc 2308

ctttgtgcag gcgaggaagg ggtgccctca ggggccgaca ctagtgtgat gcagtgtcca 2368

gtgtgaacag cagaaattaa acatgttgca acc                                2401
```

<210> 77
<211> 697
<212> PRT
<213> Homo sapiens

<400> 77

```
Met Cys Lys Ser Leu Arg Tyr Cys Phe Ser His Cys Leu Tyr Leu Ala
 1               5                  10                  15

Met Thr Arg Leu Glu Glu Val Asn Arg Glu Val Asn Met His Ser Ser
            20                  25                  30

Val Arg Tyr Leu Gly Tyr Leu Ala Arg Ile Asn Leu Leu Val Ala Ile
        35                  40                  45

Cys Leu Gly Leu Tyr Val Arg Trp Glu Lys Thr Ala Asn Ser Leu Ile
    50                  55                  60

Leu Val Ile Phe Ile Leu Gly Leu Phe Val Leu Gly Ile Ala Ser Ile
 65                  70                  75                  80

Leu Tyr Tyr Tyr Phe Ser Met Glu Ala Ala Ser Leu Ser Leu Ser Asn
                85                  90                  95

Leu Trp Phe Gly Phe Leu Leu Gly Leu Leu Cys Phe Leu Asp Asn Ser
                100                 105                 110
```

132

```
Ser Phe Lys Asn Asp Val Lys Glu Glu Ser Thr Lys Tyr Leu Leu Leu
        115              120            125

Thr Ser Ile Val Leu Arg Ile Leu Cys Ser Leu Val Glu Arg Ile Ser
        130              135            140

Gly Tyr Val Arg His Arg Pro Thr Leu Leu Thr Thr Val Glu Phe Leu
145              150             155            160

Glu Leu Val Gly Phe Ala Ile Ala Ser Thr Thr Met Leu Val Glu Lys
                165             170            175

Ser Leu Ser Val Ile Leu Leu Val Val Ala Leu Ala Met Leu Ile Ile
            180             185            190

Asp Leu Arg Met Lys Ser Phe Leu Ala Ile Pro Asn Leu Val Ile Phe
        195             200            205

Ala Val Leu Leu Phe Phe Ser Ser Leu Glu Thr Pro Lys Asn Pro Ile
        210             215            220

Ala Phe Ala Cys Phe Phe Ile Cys Leu Ile Thr Asp Pro Phe Leu Asp
225             230             235            240

Ile Tyr Phe Ser Gly Leu Ser Val Thr Glu Arg Trp Lys Pro Phe Leu
            245             250            255

Tyr Arg Gly Arg Ile Cys Arg Arg Leu Ser Val Val Phe Ala Gly Met
            260             265            270

Ile Glu Leu Thr Phe Phe Ile Leu Ser Ala Phe Lys Leu Arg Asp Thr
        275             280            285

His Leu Trp Tyr Phe Val Ile Pro Gly Phe Ser Ile Phe Gly Ile Phe
        290             295            300

Trp Met Ile Cys His Ile Ile Phe Leu Leu Thr Leu Trp Gly Phe His
305             310             315            320

Thr Lys Leu Asn Asp Cys His Lys Val Tyr Phe Thr His Arg Thr Asp
            325             330            335

Tyr Asn Ser Leu Asp Arg Ile Met Ala Ser Lys Gly Met Arg His Phe
            340             345            350

Cys Leu Ile Ser Glu Gln Leu Val Phe Phe Ser Leu Leu Ala Thr Ala
        355             360            365

Ile Leu Gly Ala Val Ser Trp Gln Pro Thr Asn Gly Ile Phe Leu Ser
    370             375             380

Met Phe Leu Ile Val Leu Pro Leu Glu Ser Met Ala His Gly Leu Phe
385             390             395            400

His Glu Leu Gly Asn Cys Leu Gly Gly Thr Ser Val Gly Tyr Ala Ile
            405             410            415
```

133

```
Val Ile Pro Thr Asn Phe Cys Ser Pro Asp Gly Gln Pro Thr Leu Leu
        420             425                 430

Pro Pro Glu His Val Gln Glu Leu Asn Leu Arg Ser Thr Gly Met Leu
        435             440                 445

Asn Ala Ile Gln Arg Phe Phe Ala Tyr His Met Ile Glu Thr Tyr Gly
    450             455                 460

Cys Asp Tyr Ser Thr Ser Gly Leu Ser Phe Asp Thr Leu His Ser Lys
465             470                 475                 480

Leu Lys Ala Phe Leu Glu Leu Arg Thr Val Asp Gly Pro Arg His Asp
            485                 490                 495

Thr Tyr Ile Leu Tyr Tyr Ser Gly His Thr His Gly Thr Gly Glu Trp
            500             505                 510

Ala Leu Ala Gly Gly Asp Thr Leu Arg Leu Asp Thr Leu Ile Glu Trp
        515             520                 525

Trp Arg Glu Lys Asn Gly Ser Phe Cys Ser Arg Leu Ile Ile Val Leu
        530             535                 540

Asp Ser Glu Asn Ser Thr Pro Trp Val Lys Glu Val Arg Lys Ile Asn
545             550                 555                 560

Asp Gln Tyr Ile Ala Val Gln Gly Ala Glu Leu Ile Lys Thr Val Asp
            565                 570                 575

Ile Glu Glu Ala Asp Pro Pro Gln Leu Gly Asp Phe Thr Lys Asp Trp
            580                 585                 590

Val Glu Tyr Asn Cys Asn Ser Ser Asn Asn Ile Cys Trp Thr Glu Lys
            595             600                 605

Gly Arg Thr Val Lys Ala Val Tyr Gly Val Ser Lys Arg Trp Ser Asp
    610             615                 620

Tyr Thr Leu His Leu Pro Thr Gly Ser Asp Val Ala Lys His Trp Met
625             630                 635                 640

Leu His Phe Pro Arg Ile Thr Tyr Pro Leu Val His Leu Ala Asn Trp
            645             650                 655

Leu Cys Gly Leu Asn Leu Phe Trp Ile Cys Lys Thr Cys Phe Arg Cys
            660             665                 670

Leu Lys Arg Leu Lys Met Ser Trp Phe Leu Pro Thr Val Leu Asp Thr
            675             680                 685

Gly Gln Gly Phe Lys Leu Val Lys Ser
    690             695
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<210> 78

134

<211> 3008
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (372)..(2462)

<400> 78
cgtaccgtcg cggatttcgg cggcggaaac atggcggtcg cggccgggcc ggtaacggag 60

aaagtttacg ccgacactgg cctgtattag cgcgtatggc ctcgggccct cgttccccaa 120

ggcgtgccgc ctccctgttc tcagtcgcag gctgaagcct tgtctgctct cctccttttt 180

ggtttggttt tggaactgac tccgagggtt gggagagcgc gttggtggcg acggccgagt 240

cagatcacta taaacaaaat ttccacaaga gaaaatgttg aaataggagt tgcggataca 300

ttggatatac tggatgaaat acaagcggtt aatttttgta cgtgaggga aaagcccaca 360

ttgctggtta c atg tgt aaa tca ctg cgt tat tgc ttt agt cat tgt ctc   410
            Met Cys Lys Ser Leu Arg Tyr Cys Phe Ser His Cys Leu
            1   5   10

tat tta gca atg aca aga ctg gaa gaa gta aat aga gaa gtg aac atg   458
Tyr Leu Ala Met Thr Arg Leu Glu Glu Val Asn Arg Glu Val Asn Met
    15   20   25

cat tct tca gtg cgg tat ctt ggc tat tta gcc aga atc aat tta ttg   506
His Ser Ser Val Arg Tyr Leu Gly Tyr Leu Ala Arg Ile Asn Leu Leu
    30   35   40   45

gtt gct ata tgc tta ggt cta tac gta aga tgg gaa aaa aca gca aat   554
Val Ala Ile Cys Leu Gly Leu Tyr Val Arg Trp Glu Lys Thr Ala Asn
                50   55   60

tcc tta att ttg gta att ttt att ctt ggt ctt ttt gtt ctt gga atc   602
Ser Leu Ile Leu Val Ile Phe Ile Leu Gly Leu Phe Val Leu Gly Ile
            65   70   75

gcc agc ata ctc tat tac tat ttt tca atg gaa gca gca agt tta agt   650
Ala Ser Ile Leu Tyr Tyr Tyr Phe Ser Met Glu Ala Ala Ser Leu Ser
            80   85   90

ctc tcc aat ctt tgg ttt gga ttc ttg ctt ggc ctc cta tgt ttt ctt   698
Leu Ser Asn Leu Trp Phe Gly Phe Leu Leu Gly Leu Leu Cys Phe Leu
        95   100   105

gat aat tca tcc ttt aaa aat gat gta aaa gaa gaa tca acc aaa tat   746
Asp Asn Ser Ser Phe Lys Asn Asp Val Lys Glu Glu Ser Thr Lys Tyr
110   115   120   125

ttg ctt cta aca tcc ata gtg tta agg ata ttg tgc tct ctg gtg gag   794
Leu Leu Leu Thr Ser Ile Val Leu Arg Ile Leu Cys Ser Leu Val Glu
            130   135   140

135

```
aga att tct ggt tat gtc cgt cat cgg ccc act tta cta acc aca gtt    842
Arg Ile Ser Gly Tyr Val Arg His Arg Pro Thr Leu Leu Thr Thr Val
            145                 150                 155

gaa ttt ctg gag ctt gtt gga ttt gcc att gcc agc aca act atg ttg    890
Glu Phe Leu Glu Leu Val Gly Phe Ala Ile Ala Ser Thr Thr Met Leu
            160                 165                 170

gtg gag aag tct ctg agt gtc att ttg ctt gtt gta gct ctg gct atg    938
Val Glu Lys Ser Leu Ser Val Ile Leu Leu Val Val Ala Leu Ala Met
            175                 180                 185

ctg att att gat ctg aga atg aaa tct ttc tta gct att cca aac tta    986
Leu Ile Ile Asp Leu Arg Met Lys Ser Phe Leu Ala Ile Pro Asn Leu
190                 195                 200                 205

gtt att ttt gca gtt ttg tta ttt ttt tcc tca ttg gaa act ccc aaa   1034
Val Ile Phe Ala Val Leu Leu Phe Phe Ser Ser Leu Glu Thr Pro Lys
                210                 215                 220

aat ccg att gct ttt gcg tgt ttt ttt att tgc ctg ata act gat cct   1082
Asn Pro Ile Ala Phe Ala Cys Phe Phe Ile Cys Leu Ile Thr Asp Pro
                225                 230                 235

ttc ctt gac att tat ttt agt gga ctt tca gta act gaa aga tgg aaa   1130
Phe Leu Asp Ile Tyr Phe Ser Gly Leu Ser Val Thr Glu Arg Trp Lys
            240                 245                 250

ccc ttt ttg tac cgt gga aga att tgc aga aga ctt tca gtc gtt ttt   1178
Pro Phe Leu Tyr Arg Gly Arg Ile Cys Arg Arg Leu Ser Val Val Phe
            255                 260                 265

gct gga atg att gag ctt aca ttt ttt att ctt tcc gca ttc aaa ctt   1226
Ala Gly Met Ile Glu Leu Thr Phe Phe Ile Leu Ser Ala Phe Lys Leu
270                 275                 280                 285

aga gac act cac ctc tgg tat ttt gta ata cct ggc ttt tcc att ttt   1274
Arg Asp Thr His Leu Trp Tyr Phe Val Ile Pro Gly Phe Ser Ile Phe
                290                 295                 300

gga att ttc tgg atg att tgt cat att att ttt ctt tta act ctt tgg   1322
Gly Ile Phe Trp Met Ile Cys His Ile Ile Phe Leu Leu Thr Leu Trp
                305                 310                 315

gga ttc cat acc aaa tta aat gac tgc cat aaa gta tat ttt act cac   1370
Gly Phe His Thr Lys Leu Asn Asp Cys His Lys Val Tyr Phe Thr His
                320                 325                 330

agg aca gat tac aat agc ctt gat aga atc atg gca tcc aaa ggg atg   1418
Arg Thr Asp Tyr Asn Ser Leu Asp Arg Ile Met Ala Ser Lys Gly Met
                335                 340                 345

cgc cat ttt tgc ttg att tca gag cag ttg gtg ttc ttt agt ctt ctt   1466
Arg His Phe Cys Leu Ile Ser Glu Gln Leu Val Phe Phe Ser Leu Leu
350                 355                 360                 365

gca aca gcg att ttg gga gca gtt tcc tgg cag cca aca aat gga att   1514
```

136

```
Ala Thr Ala Ile Leu Gly Ala Val Ser Trp Gln Pro Thr Asn Gly Ile
             370                 375                 380

ttc ttg agc atg ttt cta atc gtt ttg cca ttg gaa tcc atg gct cat   1562
Phe Leu Ser Met Phe Leu Ile Val Leu Pro Leu Glu Ser Met Ala His
             385                 390                 395

ggg ctc ttc cat gaa ttg ggt aac tgt tta gga gga aca tct gtt gga   1610
Gly Leu Phe His Glu Leu Gly Asn Cys Leu Gly Gly Thr Ser Val Gly
             400                 405                 410

tat gct att gtg att ccc acc aac ttc tgc agt cct gat ggt cag cca   1658
Tyr Ala Ile Val Ile Pro Thr Asn Phe Cys Ser Pro Asp Gly Gln Pro
             415                 420                 425

aca ctg ctt ccc cca gaa cat gta cag gag tta aat ttg agg tct act   1706
Thr Leu Leu Pro Pro Glu His Val Gln Glu Leu Asn Leu Arg Ser Thr
430                 435                 440                 445

ggc atg ctc aat gct atc caa aga ttt ttt gca tat cat atg att gag   1754
Gly Met Leu Asn Ala Ile Gln Arg Phe Phe Ala Tyr His Met Ile Glu
             450                 455                 460

acc tat gga tgt gac tat tcc aca agt gga ctg tca ttt gat act ctg   1802
Thr Tyr Gly Cys Asp Tyr Ser Thr Ser Gly Leu Ser Phe Asp Thr Leu
             465                 470                 475

cat tcc aaa cta aaa gct ttc ctc gaa ctt cgg aca gtg gat gga ccc   1850
His Ser Lys Leu Lys Ala Phe Leu Glu Leu Arg Thr Val Asp Gly Pro
             480                 485                 490

aga cat gat acg tat att ttg tat tac agt ggg cac acc cat ggt aca   1898
Arg His Asp Thr Tyr Ile Leu Tyr Tyr Ser Gly His Thr His Gly Thr
             495                 500                 505

gga gag tgg gct cta gca ggt gga gat aca cta cgc ctt gac aca ctt   1946
Gly Glu Trp Ala Leu Ala Gly Gly Asp Thr Leu Arg Leu Asp Thr Leu
510                 515                 520                 525

ata gaa tgg tgg aga gaa aag aat ggt tcc ttt tgt tcc cgg ctt att   1994
Ile Glu Trp Trp Arg Glu Lys Asn Gly Ser Phe Cys Ser Arg Leu Ile
             530                 535                 540

atc gta tta gac agc gaa aat tca acc cct tgg gtg aaa gaa gtg agg   2042
Ile Val Leu Asp Ser Glu Asn Ser Thr Pro Trp Val Lys Glu Val Arg
             545                 550                 555

aaa att aat gac cag tat att gca gtg caa gga gca gag ttg ata aaa   2090
Lys Ile Asn Asp Gln Tyr Ile Ala Val Gln Gly Ala Glu Leu Ile Lys
             560                 565                 570

aca gta gat att gaa gaa gct gac ccg cca cag cta ggt gac ttt aca   2138
Thr Val Asp Ile Glu Glu Ala Asp Pro Pro Gln Leu Gly Asp Phe Thr
575                 580                 585

aaa gac tgg gta gaa tat aac tgc aac tcc agt aat aac atc tgc tgg   2186
Lys Asp Trp Val Glu Tyr Asn Cys Asn Ser Ser Asn Asn Ile Cys Trp
```

137

```
        590                 595                 600                 605

act gaa aag gga cgc aca gtg aaa gca gta tat ggt gtg tca aaa cgg  2234
Thr Glu Lys Gly Arg Thr Val Lys Ala Val Tyr Gly Val Ser Lys Arg
            610                 615                 620

tgg agt gac tac act ctg cat ttg cca acg gga agc gat gtg gcc aag  2282
Trp Ser Asp Tyr Thr Leu His Leu Pro Thr Gly Ser Asp Val Ala Lys
            625                 630                 635

cac tgg atg tta cac ttt cct cgt att aca tat ccc cta gtg cat ttg  2330
His Trp Met Leu His Phe Pro Arg Ile Thr Tyr Pro Leu Val His Leu
            640                 645                 650

gca aat tgg tta tgc ggt ctg aac ctt ttt tgg atc tgc aaa act tgt  2378
Ala Asn Trp Leu Cys Gly Leu Asn Leu Phe Trp Ile Cys Lys Thr Cys
        655                 660                 665

ttt agg tgc ttg aaa aga tta aaa atg agt tgg ttt ctt cct act gtg  2426
Phe Arg Cys Leu Lys Arg Leu Lys Met Ser Trp Phe Leu Pro Thr Val
670                 675                 680                 685

ctg gac aca gga caa ggc ttc aaa ctt gtc aaa tct taatttggac       2472
Leu Asp Thr Gly Gln Gly Phe Lys Leu Val Lys Ser
                690                 695

cccaaagcgg gatattaata agcactcata ctaccaatta tcactaactt gccatttttt 2532

gtatgctgta tttttatttg tggaaaatac cttgctactt ctgtagctgc tctcactttg 2592

tcttttctta agtaattatg gtatatataa ggcgttggga aaaaacattt tataatgaaa 2652

gtatgtaggg agtcaaatgc ttactgtaaa tgcataagag acgttaaaaa taacactgca 2712

ctttcaggaa tgtttgctta tggtcctgat tagaaagaaa cagttgtcta tgctctgcaa 2772

tggtcaatga tgaattacta atgccttatt ttctaggcat ataataatag tttagagaat 2832

gtagaccaga taaatttgtt tactgtttta agaaaactac cagtttactt acagaagatt 2892

ctttttttcca aacagtaggt ttcatccaag accatttgaa gaactgcaaa ctctttctct 2952

tagaaaagaa agagggcagc ctaaaataaa cgcaaaattt gcttatactc catcac       3008
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<210> 79
<211> 611
<212> PRT
<213> Homo sapiens

<400> 79
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Met Glu Ala Ala Ser Leu Ser Leu Ser Asn Leu Trp Phe Gly Phe Leu
  1               5                  10                  15

Leu Gly Leu Leu Cys Phe Leu Asp Asn Ser Ser Phe Lys Asn Asp Val
            20                  25                  30
```

138

```
Lys Glu Glu Ser Thr Lys Tyr Leu Leu Leu Thr Ser Ile Val Leu Arg
        35              40                  45

Ile Leu Cys Ser Leu Val Glu Arg Ile Ser Gly Tyr Val Arg His Arg
        50              55                  60

Pro Thr Leu Leu Thr Thr Val Glu Phe Leu Glu Leu Val Gly Phe Ala
65              70                  75                      80

Ile Ala Ser Thr Thr Met Leu Val Glu Lys Ser Leu Ser Val Ile Leu
                85                  90                  95

Leu Val Val Ala Leu Ala Met Leu Ile Ile Asp Leu Arg Met Lys Ser
            100             105                 110

Phe Leu Ala Ile Pro Asn Leu Val Ile Phe Ala Val Leu Leu Phe Phe
            115             120                 125

Ser Ser Leu Glu Thr Pro Lys Asn Pro Ile Ala Phe Ala Cys Phe Phe
    130             135                 140

Ile Cys Leu Ile Thr Asp Pro Phe Leu Asp Ile Tyr Phe Ser Gly Leu
145                 150                 155                 160

Ser Val Thr Glu Arg Trp Lys Pro Phe Leu Tyr Arg Gly Arg Ile Cys
            165                 170                 175

Arg Arg Leu Ser Val Val Phe Ala Gly Met Ile Glu Leu Thr Phe Phe
            180             185                 190

Ile Leu Ser Ala Phe Lys Leu Arg Asp Thr His Leu Trp Tyr Phe Val
        195             200                 205

Ile Pro Gly Phe Ser Ile Phe Gly Ile Phe Trp Met Ile Cys His Ile
    210             215                 220

Ile Phe Leu Leu Thr Leu Trp Gly Phe His Thr Lys Leu Asn Asp Cys
225                 230                 235                 240

His Lys Val Tyr Phe Thr His Arg Thr Asp Tyr Asn Ser Leu Asp Arg
            245                 250                 255

Ile Met Ala Ser Lys Gly Met Arg His Phe Cys Leu Ile Ser Glu Gln
            260                 265                 270

Leu Val Phe Phe Ser Leu Leu Ala Thr Ala Ile Leu Gly Ala Val Ser
        275             280                 285

Trp Gln Pro Thr Asn Gly Ile Phe Leu Ser Met Phe Leu Ile Val Leu
    290             295                 300

Pro Leu Glu Ser Met Ala His Gly Leu Phe His Glu Leu Gly Asn Cys
305             310                 315                 320

Leu Gly Gly Thr Ser Val Gly Tyr Ala Ile Val Ile Pro Thr Asn Phe
            325                 330                 335
```

139

```
Cys Ser Pro Asp Gly Gln Pro Thr Leu Leu Pro Pro Glu His Val Gln
            340             345             350

Glu Leu Asn Leu Arg Ser Thr Gly Met Leu Asn Ala Ile Gln Arg Phe
            355             360             365

Phe Ala Tyr His Met Ile Glu Thr Tyr Gly Cys Asp Tyr Ser Thr Ser
    370             375             380

Gly Leu Ser Phe Asp Thr Leu His Ser Lys Leu Lys Ala Phe Leu Glu
385             390             395                 400

Leu Arg Thr Val Asp Gly Pro Arg His Asp Thr Tyr Ile Leu Tyr Tyr
            405             410             415

Ser Gly His Thr His Gly Thr Gly Glu Trp Ala Leu Ala Gly Gly Asp
            420             425             430

Thr Leu Arg Leu Asp Thr Leu Ile Glu Trp Trp Arg Glu Lys Asn Gly
            435             440             445

Ser Phe Cys Ser Arg Leu Ile Ile Val Leu Asp Ser Glu Asn Ser Thr
    450             455             460

Pro Trp Val Lys Glu Val Arg Lys Ile Asn Asp Gln Tyr Ile Ala Val
465             470             475             480

Gln Gly Ala Glu Leu Ile Lys Thr Val Asp Ile Glu Glu Ala Asp Pro
            485             490             495

Pro Gln Leu Gly Asp Phe Thr Lys Asp Trp Val Glu Tyr Asn Cys Asn
            500             505             510

Ser Ser Asn Asn Ile Cys Trp Thr Glu Lys Gly Arg Thr Val Lys Ala
            515             520             525

Val Tyr Gly Val Ser Lys Arg Trp Ser Asp Tyr Thr Leu His Leu Pro
    530             535             540

Thr Gly Ser Asp Val Ala Lys His Trp Met Leu His Phe Pro Arg Ile
545             550             555             560

Thr Tyr Pro Leu Val His Leu Ala Asn Trp Leu Cys Gly Leu Asn Leu
            565             570             575

Phe Trp Ile Cys Lys Thr Cys Phe Arg Cys Leu Lys Arg Leu Lys Met
            580             585             590

Ser Trp Phe Leu Pro Thr Val Leu Asp Thr Gly Gln Gly Phe Lys Leu
            595             600             605

Val Lys Ser
    610
```

<210> 80
<211> 3007

140

<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (629)..(2461)

<400> 80
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cgtaccgtcg cggatttcgg cggcggaaac atggcggtcg cggccgggcc ggtaacggag  60

aaagtttacg ccgacactgg cctgtattag cgcgtatggc ctcgggccct cgttccccaa  120

ggcgtgccgc ctccctgttc tcagtcgcag gctgaagcct tgtctgctct cctccttttt  180

ggtttggttt tggaactgac tccgagggtt gggagagcgc gttggtggcg acggccgagt  240

cagatcacta taaacaaaat ttccacaaga gaaaatgttg aaataggagt tgcggataca  300

ttggatatac tggatgaaat acaagcggtt aatttttgta cgtgaggga aaagcccaca  360

ttgctggtta catgtgtaaa tcactgcgtt attgctttag tcattgtctc tatttagcaa  420

tgacaagact ggaagaagta aatagagaag tgaacatgca ttcttcagtg cggtatcttg  480

ctatttagcc agaatcaatt tattggttgc tatatgctta ggtctatacg taagatggga  540

aaaaacagca aattccttaa ttttggtaat ttttattctt ggtctttttg ttcttggaat  600
```

```
cgccagcata ctctattact attttttca atg gaa gca gca agt tta agt ctc      652
                                    Met Glu Ala Ala Ser Leu Ser Leu
                                     1               5
```

```
tcc aat ctt tgg ttt gga ttc ttg ctt ggc ctc cta tgt ttt ctt gat      700
Ser Asn Leu Trp Phe Gly Phe Leu Leu Gly Leu Leu Cys Phe Leu Asp
     10              15              20
```

```
aat tca tcc ttt aaa aat gat gta aaa gaa gaa tca acc aaa tat ttg      748
Asn Ser Ser Phe Lys Asn Asp Val Lys Glu Glu Ser Thr Lys Tyr Leu
 25              30              35              40
```

```
ctt cta aca tcc ata gtg tta agg ata ttg tgc tct ctg gtg gag aga      796
Leu Leu Thr Ser Ile Val Leu Arg Ile Leu Cys Ser Leu Val Glu Arg
             45              50              55
```

```
att tct ggt tat gtc cgt cat cgg ccc act tta cta acc aca gtt gaa      844
Ile Ser Gly Tyr Val Arg His Arg Pro Thr Leu Leu Thr Thr Val Glu
             60              65              70
```

```
ttt ctg gag ctt gtt gga ttt gcc att gcc agc aca act atg ttg gtg      892
Phe Leu Glu Leu Val Gly Phe Ala Ile Ala Ser Thr Thr Met Leu Val
         75              80              85
```

```
gag aag tct ctg agt gtc att ttg ctt gtt gta gct ctg gct atg ctg      940
Glu Lys Ser Leu Ser Val Ile Leu Leu Val Val Ala Leu Ala Met Leu
     90              95              100
```

```
att att gat ctg aga atg aaa tct ttc tta gct att cca aac tta gtt      988
```

141

```
Ile Ile Asp Leu Arg Met Lys Ser Phe Leu Ala Ile Pro Asn Leu Val
105                 110                 115                 120

att ttt gca gtt ttg tta ttt ttt tcc tca ttg gaa act ccc aaa aat      1036
Ile Phe Ala Val Leu Leu Phe Phe Ser Ser Leu Glu Thr Pro Lys Asn
                125                 130                 135

ccg att gct ttt gcg tgt ttt ttt att tgc ctg ata act gat cct ttc      1084
Pro Ile Ala Phe Ala Cys Phe Phe Ile Cys Leu Ile Thr Asp Pro Phe
                140                 145                 150

ctt gac att tat ttt agt gga ctt tca gta act gaa aga tgg aaa ccc      1132
Leu Asp Ile Tyr Phe Ser Gly Leu Ser Val Thr Glu Arg Trp Lys Pro
                155                 160                 165

ttt ttg tac cgt gga aga att tgc aga aga ctt tca gtc gtt ttt gct      1180
Phe Leu Tyr Arg Gly Arg Ile Cys Arg Arg Leu Ser Val Val Phe Ala
                170                 175                 180

gga atg att gag ctt aca ttt ttt att ctt tcc gca ttc aaa ctt aga      1228
Gly Met Ile Glu Leu Thr Phe Phe Ile Leu Ser Ala Phe Lys Leu Arg
185                 190                 195                 200

gac act cac ctc tgg tat ttt gta ata cct ggc ttt tcc att ttt gga      1276
Asp Thr His Leu Trp Tyr Phe Val Ile Pro Gly Phe Ser Ile Phe Gly
                205                 210                 215

att ttc tgg atg att tgt cat att att ttt ctt tta act ctt tgg gga      1324
Ile Phe Trp Met Ile Cys His Ile Ile Phe Leu Leu Thr Leu Trp Gly
                220                 225                 230

ttc cat acc aaa tta aat gac tgc cat aaa gta tat ttt act cac agg      1372
Phe His Thr Lys Leu Asn Asp Cys His Lys Val Tyr Phe Thr His Arg
                235                 240                 245

aca gat tac aat agc ctt gat aga atc atg gca tcc aaa ggg atg cgc      1420
Thr Asp Tyr Asn Ser Leu Asp Arg Ile Met Ala Ser Lys Gly Met Arg
                250                 255                 260

cat ttt tgc ttg att tca gag cag ttg gtg ttc ttt agt ctt ctt gca      1468
His Phe Cys Leu Ile Ser Glu Gln Leu Val Phe Phe Ser Leu Leu Ala
265                 270                 275                 280

aca gcg att ttg gga gca gtt tcc tgg cag cca aca aat gga att ttc      1516
Thr Ala Ile Leu Gly Ala Val Ser Trp Gln Pro Thr Asn Gly Ile Phe
                285                 290                 295

ttg agc atg ttt cta atc gtt ttg cca ttg gaa tcc atg gct cat ggg      1564
Leu Ser Met Phe Leu Ile Val Leu Pro Leu Glu Ser Met Ala His Gly
                300                 305                 310

ctc ttc cat gaa ttg ggt aac tgt tta gga gga aca tct gtt gga tat      1612
Leu Phe His Glu Leu Gly Asn Cys Leu Gly Gly Thr Ser Val Gly Tyr
                315                 320                 325

gct att gtg att ccc acc aac ttc tgc agt cct gat ggt cag cca aca      1660
Ala Ile Val Ile Pro Thr Asn Phe Cys Ser Pro Asp Gly Gln Pro Thr
```

142

<pre>
             330   335   340

ctg ctt ccc cca gaa cat gta cag gag tta aat ttg agg tct act ggc   1708
Leu Leu Pro Pro Glu His Val Gln Glu Leu Asn Leu Arg Ser Thr Gly
345   350   355   360

atg ctc aat gct atc caa aga ttt ttt gca tat cat atg att gag acc   1756
Met Leu Asn Ala Ile Gln Arg Phe Phe Ala Tyr His Met Ile Glu Thr
                    365   370   375

tat gga tgt gac tat tcc aca agt gga ctg tca ttt gat act ctg cat   1804
Tyr Gly Cys Asp Tyr Ser Thr Ser Gly Leu Ser Phe Asp Thr Leu His
                380   385   390

tcc aaa cta aaa gct ttc ctc gaa ctt cgg aca gtg gat gga ccc aga   1852
Ser Lys Leu Lys Ala Phe Leu Glu Leu Arg Thr Val Asp Gly Pro Arg
                395   400   405

cat gat acg tat att ttg tat tac agt ggg cac acc cat ggt aca gga   1900
His Asp Thr Tyr Ile Leu Tyr Tyr Ser Gly His Thr His Gly Thr Gly
        410   415   420

gag tgg gct cta gca ggt gga gat aca cta cgc ctt gac aca ctt ata   1948
Glu Trp Ala Leu Ala Gly Gly Asp Thr Leu Arg Leu Asp Thr Leu Ile
425   430   435   440

gaa tgg tgg aga gaa aag aat ggt tcc ttt tgt tcc cgg ctt att atc   1996
Glu Trp Trp Arg Glu Lys Asn Gly Ser Phe Cys Ser Arg Leu Ile Ile
                445   450   455

gta tta gac agc gaa aat tca acc cct tgg gtg aaa gaa gtg agg aaa   2044
Val Leu Asp Ser Glu Asn Ser Thr Pro Trp Val Lys Glu Val Arg Lys
                460   465   470

att aat gac cag tat att gca gtg caa gga gca gag ttg ata aaa aca   2092
Ile Asn Asp Gln Tyr Ile Ala Val Gln Gly Ala Glu Leu Ile Lys Thr
                475   480   485

gta gat att gaa gaa gct gac ccg cca cag cta ggt gac ttt aca aaa   2140
Val Asp Ile Glu Glu Ala Asp Pro Pro Gln Leu Gly Asp Phe Thr Lys
        490   495   500

gac tgg gta gaa tat aac tgc aac tcc agt aat aac atc tgc tgg act   2188
Asp Trp Val Glu Tyr Asn Cys Asn Ser Ser Asn Asn Ile Cys Trp Thr
505   510   515   520

gaa aag gga cgc aca gtg aaa gca gta tat ggt gtg tca aaa cgg tgg   2236
Glu Lys Gly Arg Thr Val Lys Ala Val Tyr Gly Val Ser Lys Arg Trp
                525   530   535

agt gac tac act ctg cat ttg cca acg gga agc gat gtg gcc aag cac   2284
Ser Asp Tyr Thr Leu His Leu Pro Thr Gly Ser Asp Val Ala Lys His
                540   545   550

tgg atg tta cac ttt cct cgt att aca tat ccc cta gtg cat ttg gca   2332
Trp Met Leu His Phe Pro Arg Ile Thr Tyr Pro Leu Val His Leu Ala
                555   560   565
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143

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aat tgg tta tgc ggt ctg aac ctt ttt tgg atc tgc aaa act tgt ttt   2380
Asn Trp Leu Cys Gly Leu Asn Leu Phe Trp Ile Cys Lys Thr Cys Phe
    570             575             580

agg tgc ttg aaa aga tta aaa atg agt tgg ttt ctt cct act gtg ctg   2428
Arg Cys Leu Lys Arg Leu Lys Met Ser Trp Phe Leu Pro Thr Val Leu
585             590             595             600

gac aca gga caa ggc ttc aaa ctt gtc aaa tct taatttggac cccaaagcgg 2481
Asp Thr Gly Gln Gly Phe Lys Leu Val Lys Ser
                605             610

gatattaata agcactcata ctaccaatta tcactaactt gccatttttt gtatgctgta 2541

tttttatttg tggaaaatac cttgctactt ctgtagctgc tctcactttg tcttttctta 2601

agtaattatg gtatatataa ggcgttggga aaaaacattt tataatgaaa gtatgtaggg 2661

agtcaaatgc ttactgtaaa tgcataagag acgttaaaaa taacactgca ctttcaggaa 2721

tgtttgctta tggtcctgat tagaaagaaa cagttgtcta tgctctgcaa tggtcaatga 2781

tgaattacta atgccttatt ttctaggcat ataataatag tttagagaat gtagaccaga 2841

taaatttgtt tactgtttta agaaaactac cagtttactt acagaagatt ctttttccca 2901

aacagtaggt ttcatccaag accatttgaa gaactgcaaa ctctttctct tagaaaagaa 2961

agagggcagc ctaaaataaa cgcaaaattt gcttatactc catcac              3007


<210> 81
<211> 184
<212> PRT
<213> Homo sapiens

<400> 81
Met Thr Ser Phe Glu Asp Ala Asp Thr Glu Glu Thr Val Thr Cys Leu
  1               5                  10                  15

Gln Met Thr Val Tyr His Pro Gly Gln Leu Gln Cys Gly Ile Phe Gln
                20                  25                  30

Ser Ile Ser Phe Asn Arg Glu Lys Leu Pro Ser Ser Glu Val Val Lys
            35                  40                  45

Phe Gly Arg Asn Ser Asn Ile Cys His Tyr Thr Phe Gln Asp Lys Gln
        50                  55                  60

Val Ser Arg Val Gln Phe Ser Leu Gln Leu Phe Lys Lys Phe Asn Ser
65                  70                  75                  80

Ser Val Leu Ser Phe Glu Ile Lys Asn Met Ser Lys Lys Thr Asn Leu
                85                  90                  95

Ile Val Asp Ser Arg Glu Leu Gly Tyr Leu Asn Lys Met Asp Leu Pro
```

144

```
              100                    105                    110
Tyr Arg Cys Met Val Arg Phe Gly Glu Tyr Gln Phe Leu Met Glu Lys
        115                    120                    125
Glu Asp Gly Glu Ser Leu Glu Phe Phe Glu Thr Gln Phe Ile Leu Ser
    130                    135                    140
Pro Arg Ser Leu Leu Gln Glu Asn Asn Trp Pro Pro His Arg Pro Ile
145                    150                    155                    160
Pro Glu Tyr Gly Thr Tyr Ser Leu Cys Ser Ser Gln Ser Ser Ser Pro
                165                    170                    175
Thr Glu Met Asp Glu Asn Glu Ser
            180
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<210> 82
<211> 1617
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (285)..(836)

<400> 82

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ttttacaaa ggccccgggc gcgagaggac gtgctctgcc agccagtggg aaggcaggcc 60

gcgcgcgcgg gagcgcggga ggatcggcgg ctcgcggtca ctggtccctg gctcggttcc 120

ccgcaccccg gggctcacac ttacccgcgc ggaggagcag cggccgggtg tccacccccca 180

tcctgcgccc agtctcctcg attccctcg ctctgagccg ggagagccga acagctgaag 240

agagttcact gactccccag ccccaggtgg gccttgtgca catc atg acc agt ttt 296
                                             Met Thr Ser Phe
                                              1

gaa gat gct gac aca gaa gag aca gta act tgt ctc cag atg acg gtt   344
Glu Asp Ala Asp Thr Glu Glu Thr Val Thr Cys Leu Gln Met Thr Val
  5                  10                  15                  20

tac cat cct ggc cag ttg cag tgt gga ata ttt cag tca ata agt ttt   392
Tyr His Pro Gly Gln Leu Gln Cys Gly Ile Phe Gln Ser Ile Ser Phe
                25                  30                  35

aac aga gag aaa ctc cct tcc agc gaa gtg gtg aaa ttt ggc cga aat   440
Asn Arg Glu Lys Leu Pro Ser Ser Glu Val Val Lys Phe Gly Arg Asn
                40                  45                  50

tcc aac atc tgt cat tat act ttt cag gac aaa cag gtt tcc cga gtt   488
Ser Asn Ile Cys His Tyr Thr Phe Gln Asp Lys Gln Val Ser Arg Val
            55                  60                  65

cag ttt tct ctg cag ctg ttt aaa aaa ttc aac agc tca gtt ctc tcc   536
```

145

```
Gln Phe Ser Leu Gln Leu Phe Lys Lys Phe Asn Ser Ser Val Leu Ser
     70                  75                  80

ttt gaa ata aaa aat atg agt aaa aag acc aat ctg atc gtg gac agc    584
Phe Glu Ile Lys Asn Met Ser Lys Lys Thr Asn Leu Ile Val Asp Ser
 85                  90                  95                 100

aga gag ctg ggc tac cta aat aaa atg gac ctg cca tac agg tgc atg    632
Arg Glu Leu Gly Tyr Leu Asn Lys Met Asp Leu Pro Tyr Arg Cys Met
                105                 110                 115

gtc aga ttc gga gag tat cag ttt ctg atg gag aag gaa gat ggc gag    680
Val Arg Phe Gly Glu Tyr Gln Phe Leu Met Glu Lys Glu Asp Gly Glu
            120                 125                 130

tca ttg gaa ttt ttt gag act caa ttt att tta tct cca aga tca ctc    728
Ser Leu Glu Phe Phe Glu Thr Gln Phe Ile Leu Ser Pro Arg Ser Leu
            135                 140                 145

ttg caa gaa aac aac tgg cca cca cac agg ccc ata ccg gag tat ggc    776
Leu Gln Glu Asn Asn Trp Pro Pro His Arg Pro Ile Pro Glu Tyr Gly
        150                 155                 160

act tat tcg ctc tgc tcc tcc caa agc agt tct ccg aca gaa atg gat    824
Thr Tyr Ser Leu Cys Ser Ser Gln Ser Ser Ser Pro Thr Glu Met Asp
165                 170                 175                 180

gaa aat gag tca tgaacacaga aagtctaaga ggagaaatat gatggatgaa        876
Glu Asn Glu Ser

gagctctgta gatgctgtat agacactaaa taagagttga ttagggtagt atattatagt 936

catctgttat gctgtgaaat ttggaattca gtattatcat tttgaagtct gtaaattgtg 996

ttagtcatta acttagtcac ctgttgtatt ctggatctac acaaaattat tttaactgct 1056

cttattaatc tgtgaggatt aatatacaaa aagtatcctt tgagatgaag tcgtgttctc 1116

aaaataaggt tatattattt tcttttctg cttgattttc atcttgtgtt ttgctttgtt 1176

tttgtaagga accatctctt ggtttggtca catcagttca caacagccat ttgttttcaa 1236

ggtcaaggct ccaggcaggt tgttactggt gtttgcagcc tgtcagtact tgcagtactg 1296

gaataggttc taggctagtg tctgcgcgtc actgtggttt tagcatggga ggacttattt 1356

gagaaatact accttacttt tctatgattt cttttacag agttatagtg tgtttactcc 1416

taagatgaca gttctctttg tctatattca gcatctaaga caaatattta aacattttaa 1476

agaaccactg tgttaagttt aggattattt acttaccaaa ttagaagttt gacttttatg 1536

tgttatacac aatcttaaaa tttcacgaat tcacctttt aatagtatcc atgtacataa 1596

taaaatcaaa gtttaattag c                                            1617
```

146

<210> 83
<211> 392
<212> PRT
<213> Homo sapiens

<400> 83
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Met Asp Ala Arg Trp Trp Ala Val Val Val Leu Ala Ala Phe Pro Ser
 1               5                   10                  15

Leu Gly Ala Gly Gly Glu Thr Pro Glu Ala Pro Pro Glu Ser Trp Thr
            20                  25                  30

Gln Leu Trp Phe Phe Arg Phe Val Val Asn Ala Ala Gly Tyr Ala Ser
        35                  40                  45

Phe Met Val Pro Gly Tyr Leu Leu Val Gln Tyr Phe Arg Arg Lys Asn
    50                  55                  60

Tyr Leu Glu Thr Gly Arg Gly Leu Cys Phe Pro Leu Val Lys Ala Cys
65                  70                  75                  80

Val Phe Gly Asn Glu Pro Lys Ala Ser Asp Glu Val Pro Leu Ala Pro
                85                  90                  95

Arg Thr Glu Ala Ala Glu Thr Thr Pro Met Trp Gln Ala Leu Lys Leu
            100                 105                 110

Leu Phe Cys Ala Thr Gly Leu Gln Val Ser Tyr Leu Thr Trp Gly Val
        115                 120                 125

Leu Gln Glu Arg Val Met Thr Arg Ser Tyr Gly Ala Thr Ala Thr Ser
    130                 135                 140

Pro Gly Glu Arg Phe Thr Asp Ser Gln Phe Leu Val Leu Met Asn Arg
145                 150                 155                 160

Val Leu Ala Leu Ile Val Ala Gly Leu Ser Cys Val Leu Cys Lys Gln
                165                 170                 175

Pro Arg His Gly Ala Pro Met Tyr Arg Tyr Ser Phe Ala Ser Leu Ser
            180                 185                 190

Asn Val Leu Ser Ser Trp Cys Gln Tyr Glu Ala Leu Lys Phe Val Ser
            195                 200                 205

Phe Pro Thr Gln Val Leu Ala Lys Ala Ser Lys Val Ile Pro Val Met
    210                 215                 220

Leu Met Gly Lys Leu Val Ser Arg Arg Ser Tyr Glu His Trp Glu Tyr
225                 230                 235                 240

Leu Thr Ala Thr Leu Ile Ser Ile Gly Val Ser Met Phe Leu Leu Ser
                245                 250                 255

Ser Gly Pro Glu Pro Arg Ser Ser Pro Ala Thr Thr Leu Ser Gly Leu
            260                 265                 270
```

147

```
Phe Thr Val Gly Ser Leu Leu Glu Gln Gly Ala Leu Leu Glu Gly Thr
        275                 280             285

Arg Phe Met Gly Arg His Ser Glu Phe Ala Ala His Ala Leu Leu Leu
        290                 295             300

Ser Ile Cys Ser Ala Cys Gly Gln Leu Phe Ile Phe Tyr Thr Ile Gly
305             310                 315             320

Gln Phe Gly Ala Ala Val Phe Thr Ile Ile Met Thr Leu Arg Gln Ala
        325                 330             335

Phe Ala Ile Leu Leu Ser Cys Leu Leu Tyr Gly His Thr Val Thr Val
        340                 345             350

Val Gly Gly Leu Gly Val Ala Val Val Phe Ala Ala Leu Leu Leu Arg
        355                 360             365

Val Tyr Ala Arg Gly Arg Leu Lys Gln Arg Gly Lys Lys Ala Val Pro
    370                 375             380

Val Glu Ser Pro Val Gln Lys Val
385                 390


<210> 84
<211> 1898
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (119)..(1294)

<400> 84
acttccgctg gccgctggct cgctggccgc tcctggaggc ggcggcggga gcgcaggggg 60

cgcgcggccc ggggactcgc attccccggt tcccctcca ccccacgcgg cctggacc    118

atg gac gcc aga tgg tgg gca gtg gtg gtg ctg gct gcg ttc ccc tcc  166
Met Asp Ala Arg Trp Trp Ala Val Val Val Leu Ala Ala Phe Pro Ser
  1           5                  10                  15

cta ggg gca ggt ggg gag act ccc gaa gcc cct ccg gag tca tgg acc  214
Leu Gly Ala Gly Gly Glu Thr Pro Glu Ala Pro Pro Glu Ser Trp Thr
            20                  25                  30

cag cta tgg ttc ttc cga ttt gtg gtg aat gct gct ggc tat gcc agc  262
Gln Leu Trp Phe Phe Arg Phe Val Val Asn Ala Ala Gly Tyr Ala Ser
        35                  40                  45

ttt atg gta cct ggc tac ctc ctg gtg cag tac ttc agg cgg aag aac  310
Phe Met Val Pro Gly Tyr Leu Leu Val Gln Tyr Phe Arg Arg Lys Asn
        50                  55                  60

tac ctg gag acc ggt agg ggc ctc tgc ttt ccc ctg gtg aaa gct tgt  358
Tyr Leu Glu Thr Gly Arg Gly Leu Cys Phe Pro Leu Val Lys Ala Cys
```

148

```
            65                    70                    75                    80

gtg ttt ggc aat gag ccc aag gcc tct gat gag gtt ccc ctg gcg ccc   406
Val Phe Gly Asn Glu Pro Lys Ala Ser Asp Glu Val Pro Leu Ala Pro
                85                    90                    95

cga aca gag gcg gca gag acc acc ccg atg tgg cag gcc ctg aag ctg   454
Arg Thr Glu Ala Ala Glu Thr Thr Pro Met Trp Gln Ala Leu Lys Leu
                100                   105                   110

ctc ttc tgt gcc aca ggg ctc cag gtg tct tat ctg act tgg ggt gtg   502
Leu Phe Cys Ala Thr Gly Leu Gln Val Ser Tyr Leu Thr Trp Gly Val
                115                   120                   125

ctg cag gaa aga gtg atg acc cgc agc tat ggg gcc aca gcc aca tca   550
Leu Gln Glu Arg Val Met Thr Arg Ser Tyr Gly Ala Thr Ala Thr Ser
                130                   135                   140

ccg ggt gag cgc ttt acg gac tcg cag ttc ctg gtg cta atg aac cga   598
Pro Gly Glu Arg Phe Thr Asp Ser Gln Phe Leu Val Leu Met Asn Arg
145                   150                   155                   160

gtg ctg gca ctg att gtg gct ggc ctc tcc tgt gtt ctc tgc aag cag   646
Val Leu Ala Leu Ile Val Ala Gly Leu Ser Cys Val Leu Cys Lys Gln
                165                   170                   175

ccc cgg cat ggg gca ccc atg tac cgg tac tcc ttt gcc agc ctg tcc   694
Pro Arg His Gly Ala Pro Met Tyr Arg Tyr Ser Phe Ala Ser Leu Ser
                180                   185                   190

aat gtg ctt agc agc tgg tgc caa tac gaa gct ctt aag ttc gtc agc   742
Asn Val Leu Ser Ser Trp Cys Gln Tyr Glu Ala Leu Lys Phe Val Ser
                195                   200                   205

ttc ccc acc cag gtg ctg gcc aag gcc tct aag gtg atc cct gtc atg   790
Phe Pro Thr Gln Val Leu Ala Lys Ala Ser Lys Val Ile Pro Val Met
                210                   215                   220

ctg atg gga aag ctt gtg tct cgg cgc agc tac gaa cac tgg gag tac   838
Leu Met Gly Lys Leu Val Ser Arg Arg Ser Tyr Glu His Trp Glu Tyr
225                   230                   235                   240

ctg aca gcc acc ctc atc tcc att ggg gtc agc atg ttt ctg cta tcc   886
Leu Thr Ala Thr Leu Ile Ser Ile Gly Val Ser Met Phe Leu Leu Ser
                245                   250                   255

agc gga cca gag ccc cgc agc tcc cca gcc acc aca ctc tca ggc ctc   934
Ser Gly Pro Glu Pro Arg Ser Ser Pro Ala Thr Thr Leu Ser Gly Leu
                260                   265                   270

ttc aca gtg ggc tca ctg cta gaa cag ggg gcc cta ctg gag gga acc   982
Phe Thr Val Gly Ser Leu Leu Glu Gln Gly Ala Leu Leu Glu Gly Thr
                275                   280                   285

cgc ttc atg ggg cga cac agt gag ttt gct gcc cat gcc ctg cta ctc   1030
Arg Phe Met Gly Arg His Ser Glu Phe Ala Ala His Ala Leu Leu Leu
                290                   295                   300
```

149

```
tcc atc tgc tcc gca tgt ggc cag ctc ttc atc ttt tac acc att ggg    1078
Ser Ile Cys Ser Ala Cys Gly Gln Leu Phe Ile Phe Tyr Thr Ile Gly
305             310             315             320

cag ttt ggg gct gcc gtc ttc acc atc atc atg acc ctc cgc cag gcc    1126
Gln Phe Gly Ala Ala Val Phe Thr Ile Ile Met Thr Leu Arg Gln Ala
                325             330             335

ttt gcc atc ctt ctt tcc tgc ctt ctc tat ggc cac act gtc act gtg    1174
Phe Ala Ile Leu Leu Ser Cys Leu Leu Tyr Gly His Thr Val Thr Val
            340             345             350

gtg gga ggg ctg ggg gtg gct gtg gtc ttt gct gcc ctc ctg ctc aga    1222
Val Gly Gly Leu Gly Val Ala Val Val Phe Ala Ala Leu Leu Leu Arg
            355             360             365

gtc tac gcg cgg ggc cgt cta aag caa cgg gga aag aag gct gtg cct    1270
Val Tyr Ala Arg Gly Arg Leu Lys Gln Arg Gly Lys Lys Ala Val Pro
    370             375             380

gtt gag tct cct gtg cag aag gtt tgagggtgga aagggcctga ggggtgaagt   1324
Val Glu Ser Pro Val Gln Lys Val
385             390

gaaataggac cctcccacca tcccttctg ctgtaacctc tgagggagct ggctgaaagg    1384

gcaaaatgca ggtgttttct cagtatcaca gaccagctct gcagcagggg attggggagc    1444

ccaggaggca gccttccctt ttgccttaag tcacccatct tccagtaagc agtttattct    1504

gagccccggg ggtagacagt cctcagtgag gggttttggg gagtttgggg tcaagagagc    1564

ataggtaggt tccacagtta ctcttcccac aagttccctt aagtcttgcc ctagctgtgc    1624

tctgccacct tccagactca ctcccctctg caaatacctg catttcttac cctggtgaga    1684

aaagcacaag cggtgtaggc tccaatgctg ctttcccagg agggtgaaga tggtgctgtg    1744

ctgaggaaag gggatgcaga gccctgccca gcaccaccac ctcctatgct cctggatccc    1804

taggctctgt tccatgagcc tgttgcaggt tttggtactt tagaaatgta acttttttgct    1864

cttataattt tattttatta aattaaatta ctgc                                1898


<210> 85
<211> 432
<212> PRT
<213> Homo sapiens

<400> 85
Met Asp Ala Arg Trp Trp Ala Val Val Val Leu Ala Ala Phe Pro Ser
 1               5                   10                  15

Leu Gly Ala Gly Gly Glu Thr Pro Glu Ala Pro Pro Glu Ser Trp Thr
            20                  25                  30
```

```
Gln Leu Trp Phe Phe Arg Phe Val Val Asn Ala Ala Gly Tyr Ala Ser
        35              40                  45

Phe Met Val Pro Gly Tyr Leu Leu Val Gln Tyr Phe Arg Arg Lys Asn
    50              55                  60

Tyr Leu Glu Thr Gly Arg Gly Leu Cys Phe Pro Leu Val Lys Ala Cys
65              70                  75                      80

Val Phe Gly Asn Glu Pro Lys Ala Ser Asp Glu Val Pro Leu Ala Pro
                85                  90                      95

Arg Thr Glu Ala Ala Glu Thr Thr Pro Met Trp Gln Ala Leu Lys Leu
            100                 105                 110

Leu Phe Cys Ala Thr Gly Leu Gln Val Ser Tyr Leu Thr Trp Gly Val
        115                 120                 125

Leu Gln Glu Arg Val Met Thr Arg Ser Tyr Gly Ala Thr Ala Thr Ser
    130                 135                 140

Pro Gly Glu Arg Phe Thr Asp Ser Gln Phe Leu Val Leu Met Asn Arg
145                 150                 155                 160

Val Leu Ala Leu Ile Val Ala Gly Leu Ser Cys Val Leu Cys Lys Gln
            165                 170                 175

Pro Arg His Gly Ala Pro Met Tyr Arg Tyr Ser Phe Ala Ser Leu Ser
            180                 185                 190

Asn Val Leu Ser Ser Trp Cys Gln Tyr Glu Ala Leu Lys Phe Val Ser
        195                 200                 205

Phe Pro Thr Gln Val Leu Ala Lys Ala Ser Lys Val Ile Pro Val Met
    210                 215                 220

Leu Met Gly Lys Leu Val Ser Arg Arg Ser Tyr Glu His Trp Glu Tyr
225                 230                 235                 240

Leu Thr Ala Thr Leu Ile Ser Ile Gly Val Ser Met Phe Leu Leu Ser
            245                 250                 255

Ser Gly Pro Glu Pro Arg Ser Ser Pro Ala Thr Thr Leu Ser Gly Leu
            260                 265                 270

Ile Leu Leu Ala Gly Tyr Ile Ala Phe Asp Ser Phe Thr Ser Asn Trp
        275                 280                 285

Gln Asp Ala Leu Phe Ala Tyr Lys Met Ser Ser Val Gln Met Met Phe
    290                 295                 300

Gly Val Asn Phe Phe Ser Cys Leu Phe Thr Val Gly Ser Leu Leu Glu
305                 310                 315                 320

Gln Gly Ala Leu Leu Glu Gly Thr Arg Phe Met Gly Arg His Ser Glu
            325                 330                 335
```

151

```
Phe Ala Ala His Ala Leu Leu Leu Ser Ile Cys Ser Ala Cys Gly Gln
            340                 345                 350

Leu Phe Ile Phe Tyr Thr Ile Gly Gln Phe Gly Ala Ala Val Phe Thr
            355                 360                 365

Ile Ile Met Thr Leu Arg Gln Ala Phe Ala Ile Leu Leu Ser Cys Leu
            370                 375                 380

Leu Tyr Gly His Thr Val Thr Val Val Gly Gly Leu Gly Val Ala Val
385                 390                 395                 400

Val Phe Ala Ala Leu Leu Leu Arg Val Tyr Ala Arg Gly Arg Leu Lys
                405             410                 415

Gln Arg Gly Lys Lys Ala Val Pro Val Glu Ser Pro Val Gln Lys Val
            420                 425                 430


<210> 86
<211> 2018
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (119)..(1414)

<400> 86
acttccgctg gccgctggct cgctggccgc tcctggaggc ggcggcggga gcgcagggggg 60

cgcgcggccc ggggactcgc attccccggt tccccctcca ccccacgcgg cctggacc    118

atg gac gcc aga tgg tgg gca gtg gtg gtg ctg gct gcg ttc ccc tcc    166
Met Asp Ala Arg Trp Trp Ala Val Val Val Leu Ala Ala Phe Pro Ser
 1               5                  10                  15

cta ggg gca ggt ggg gag act ccc gaa gcc cct ccg gag tca tgg acc    214
Leu Gly Ala Gly Gly Glu Thr Pro Glu Ala Pro Pro Glu Ser Trp Thr
            20                  25                  30

cag cta tgg ttc ttc cga ttt gtg gtg aat gct gct ggc tat gcc agc    262
Gln Leu Trp Phe Phe Arg Phe Val Val Asn Ala Ala Gly Tyr Ala Ser
        35                  40                  45

ttt atg gta cct ggc tac ctc ctg gtg cag tac ttc agg cgg aag aac    310
Phe Met Val Pro Gly Tyr Leu Leu Val Gln Tyr Phe Arg Arg Lys Asn
    50                  55                  60

tac ctg gag acc ggt agg ggc ctc tgc ttt ccc ctg gtg aaa gct tgt    358
Tyr Leu Glu Thr Gly Arg Gly Leu Cys Phe Pro Leu Val Lys Ala Cys
65                  70                  75                  80

gtg ttt ggc aat gag ccc aag gcc tct gat gag gtt ccc ctg gcg ccc    406
Val Phe Gly Asn Glu Pro Lys Ala Ser Asp Glu Val Pro Leu Ala Pro
                85                  90                  95
```

152

```
cga aca gag gcg gca gag acc acc ccg atg tgg cag gcc ctg aag ctg      454
Arg Thr Glu Ala Ala Glu Thr Thr Pro Met Trp Gln Ala Leu Lys Leu
            100                 105                 110

ctc ttc tgt gcc aca ggg ctc cag gtg tct tat ctg act tgg ggt gtg      502
Leu Phe Cys Ala Thr Gly Leu Gln Val Ser Tyr Leu Thr Trp Gly Val
            115                 120                 125

ctg cag gaa aga gtg atg acc cgc agc tat ggg gcc aca gcc aca tca      550
Leu Gln Glu Arg Val Met Thr Arg Ser Tyr Gly Ala Thr Ala Thr Ser
            130                 135                 140

ccg ggt gag cgc ttt acg gac tcg cag ttc ctg gtg cta atg aac cga      598
Pro Gly Glu Arg Phe Thr Asp Ser Gln Phe Leu Val Leu Met Asn Arg
145                 150                 155                 160

gtg ctg gca ctg att gtg gct ggc ctc tcc tgt gtt ctc tgc aag cag      646
Val Leu Ala Leu Ile Val Ala Gly Leu Ser Cys Val Leu Cys Lys Gln
                165                 170                 175

ccc cgg cat ggg gca ccc atg tac cgg tac tcc ttt gcc agc ctg tcc      694
Pro Arg His Gly Ala Pro Met Tyr Arg Tyr Ser Phe Ala Ser Leu Ser
                180                 185                 190

aat gtg ctt agc agc tgg tgc caa tac gaa gct ctt aag ttc gtc agc      742
Asn Val Leu Ser Ser Trp Cys Gln Tyr Glu Ala Leu Lys Phe Val Ser
            195                 200                 205

ttc ccc acc cag gtg ctg gcc aag gcc tct aag gtg atc cct gtc atg      790
Phe Pro Thr Gln Val Leu Ala Lys Ala Ser Lys Val Ile Pro Val Met
            210                 215                 220

ctg atg gga aag ctt gtg tct cgg cgc agc tac gaa cac tgg gag tac      838
Leu Met Gly Lys Leu Val Ser Arg Arg Ser Tyr Glu His Trp Glu Tyr
225                 230                 235                 240

ctg aca gcc acc ctc atc tcc att ggg gtc agc atg ttt ctg cta tcc      886
Leu Thr Ala Thr Leu Ile Ser Ile Gly Val Ser Met Phe Leu Leu Ser
                245                 250                 255

agc gga cca gag ccc cgc agc tcc cca gcc acc aca ctc tca ggc ctc      934
Ser Gly Pro Glu Pro Arg Ser Ser Pro Ala Thr Thr Leu Ser Gly Leu
                260                 265                 270

atc tta ctg gca ggt tat att gct ttt gac agc ttc acc tca aac tgg      982
Ile Leu Leu Ala Gly Tyr Ile Ala Phe Asp Ser Phe Thr Ser Asn Trp
            275                 280                 285

cag gat gcc ctg ttt gcc tat aag atg tca tcg gtg cag atg atg ttt     1030
Gln Asp Ala Leu Phe Ala Tyr Lys Met Ser Ser Val Gln Met Met Phe
            290                 295                 300

ggg gtc aat ttc ttc tcc tgc ctc ttc aca gtg ggc tca ctg cta gaa     1078
Gly Val Asn Phe Phe Ser Cys Leu Phe Thr Val Gly Ser Leu Leu Glu
305                 310                 315                 320
```

153

```
cag ggg gcc cta ctg gag gga acc cgc ttc atg ggg cga cac agt gag   1126
Gln Gly Ala Leu Leu Glu Gly Thr Arg Phe Met Gly Arg His Ser Glu
            325                 330                 335

ttt gct gcc cat gcc ctg cta ctc tcc atc tgc tcc gca tgt ggc cag   1174
Phe Ala Ala His Ala Leu Leu Leu Ser Ile Cys Ser Ala Cys Gly Gln
            340                 345                 350

ctc ttc atc ttt tac acc att ggg cag ttt ggg gct gcc gtc ttc acc   1222
Leu Phe Ile Phe Tyr Thr Ile Gly Gln Phe Gly Ala Ala Val Phe Thr
            355                 360                 365

atc atc atg acc ctc cgc cag gcc ttt gcc atc ctt ctt tcc tgc ctt   1270
Ile Ile Met Thr Leu Arg Gln Ala Phe Ala Ile Leu Leu Ser Cys Leu
            370                 375                 380

ctc tat ggc cac act gtc act gtg gtg gga ggg ctg ggg gtg gct gtg   1318
Leu Tyr Gly His Thr Val Thr Val Val Gly Gly Leu Gly Val Ala Val
385                 390                 395                 400

gtc ttt gct gcc ctc ctg ctc aga gtc tac gcg cgg ggc cgt cta aag   1366
Val Phe Ala Ala Leu Leu Leu Arg Val Tyr Ala Arg Gly Arg Leu Lys
            405                 410                 415

caa cgg gga aag aag gct gtg cct gtt gag tct cct gtg cag aag gtt   1414
Gln Arg Gly Lys Lys Ala Val Pro Val Glu Ser Pro Val Gln Lys Val
            420                 425                 430

tgagggtgga aagggcctga ggggtgaagt gaaataggac cctcccacca tccccttctg 1474

ctgtaacctc tgagggagct ggctgaaagg gcaaaatgca ggtgttttct cagtatcaca 1534

gaccagctct gcagcagggg attggggagc ccaggaggca gccttccctt ttgccttaag 1594

tcacccatct tccagtaagc agtttattct gagccccggg ggtagacagt cctcagtgag 1654

gggttttggg gagtttgggg tcaagagagc ataggtaggt tccacagtta ctcttcccac 1714

aagttccctt aagtcttgcc ctagctgtgc tctgccacct tccagactca ctccctctg 1774

caaatacctg catttcttac cctggtgaga aaagcacaag cggtgtaggc tccaatgctg 1834

ctttcccagg agggtgaaga tggtgctgtg ctgaggaaag gggatgcaga gccctgccca 1894

gcaccaccac ctcctatgct cctggatccc taggctctgt tccatgagcc tgttgcaggt 1954

tttggtactt tagaaatgta actttttgct cttataattt tattttatta aattaaatta 2014

ctgc                                                              2018
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<210> 87
<211> 235
<212> PRT
<213> Homo sapiens

<400> 87

154

```
Met Gly Ile Gly Lys Ser Lys Ile Asn Ser Cys Pro Leu Ser Leu Ser
 1               5                  10               15

Trp Gly Lys Arg His Ser Val Asp Thr Ser Pro Gly Tyr His Glu Ser
            20              25              30

Asp Ser Lys Lys Ser Glu Asp Leu Ser Leu Cys Asn Val Ala Glu His
            35              40              45

Ser Asn Thr Thr Glu Gly Pro Thr Gly Lys Gln Glu Gly Ala Gln Ser
        50              55              60

Val Glu Glu Met Phe Glu Glu Glu Ala Glu Glu Glu Val Phe Leu Lys
65              70              75              80

Phe Val Ile Leu His Ala Glu Asp Asp Thr Asp Glu Ala Leu Arg Val
                85              90              95

Gln Asn Leu Leu Gln Asp Asp Phe Gly Ile Lys Pro Gly Ile Ile Phe
            100             105             110

Ala Glu Met Pro Cys Gly Arg Gln His Leu Gln Asn Leu Asp Asp Ala
            115             120             125

Val Asn Gly Ser Ala Trp Thr Ile Leu Leu Leu Thr Glu Asn Phe Leu
    130             135             140

Arg Asp Thr Trp Cys Asn Phe Gln Phe Tyr Thr Ser Leu Met Asn Ser
145             150             155             160

Val Asn Arg Gln His Lys Tyr Asn Ser Val Ile Pro Met Arg Pro Leu
            165             170             175

Asn Asn Pro Leu Pro Arg Glu Arg Thr Pro Phe Ala Leu Gln Thr Ile
            180             185             190

Asn Ala Leu Glu Glu Glu Ser Arg Gly Phe Pro Thr Gln Val Glu Arg
            195             200             205

Ile Phe Gln Glu Ser Val Tyr Lys Thr Gln Gln Thr Ile Trp Lys Glu
    210             215             220

Thr Arg Asn Met Val Gln Arg Gln Phe Ile Ala
225             230             235
```

<210> 88
<211> 2717
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (111)..(815)

<400> 88
aaaaggaaga cagaaaagcc gcgggctgac tgtggtggcg ctcgcctgca gattgaaaag 60

155

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aaatgctgag aaatacataa agttttcctc ttctgccttg gatatttata atg ggt      116
                                                        Met Gly
                                                          1

atc ggg aag tct aaa ata aat tcc tgc cct ctt tct ctc tct tgg ggt      164
Ile Gly Lys Ser Lys Ile Asn Ser Cys Pro Leu Ser Leu Ser Trp Gly
          5               10                  15

aaa agg cac agt gtg gat aca agt cca gga tat cat gag tca gat tcc      212
Lys Arg His Ser Val Asp Thr Ser Pro Gly Tyr His Glu Ser Asp Ser
         20              25                  30

aag aag tct gaa gat cta tcc ttg tgt aat gtt gct gag cac agc aat      260
Lys Lys Ser Glu Asp Leu Ser Leu Cys Asn Val Ala Glu His Ser Asn
 35              40              45                  50

aca aca gag ggg cca aca gga aag cag gag gga gct cag agc gtg gaa      308
Thr Thr Glu Gly Pro Thr Gly Lys Gln Glu Gly Ala Gln Ser Val Glu
                55              60                  65

gag atg ttt gaa gaa gaa gct gaa gaa gag gtg ttc ctc aaa ttt gtg      356
Glu Met Phe Glu Glu Glu Ala Glu Glu Glu Val Phe Leu Lys Phe Val
                70              75                  80

ata ttg cat gca gaa gat gac aca gat gaa gcc ctc aga gtc cag aat      404
Ile Leu His Ala Glu Asp Asp Thr Asp Glu Ala Leu Arg Val Gln Asn
            85              90                  95

ctg cta caa gat gac ttt ggt atc aaa ccc gga ata atc ttt gct gag      452
Leu Leu Gln Asp Asp Phe Gly Ile Lys Pro Gly Ile Ile Phe Ala Glu
    100             105                 110

atg cca tgt ggc aga cag cat tta cag aat tta gat gat gct gta aat      500
Met Pro Cys Gly Arg Gln His Leu Gln Asn Leu Asp Asp Ala Val Asn
115             120                 125                 130

ggg tct gca tgg aca atc tta tta ctg act gaa aac ttt tta aga gat      548
Gly Ser Ala Trp Thr Ile Leu Leu Leu Thr Glu Asn Phe Leu Arg Asp
                135                 140                 145

act tgg tgt aat ttc cag ttc tat acg tcc cta atg aac tcc gtt aac      596
Thr Trp Cys Asn Phe Gln Phe Tyr Thr Ser Leu Met Asn Ser Val Asn
            150                 155                 160

agg cag cat aaa tac aac tct gtt ata ccc atg cgg ccc ctg aac aat      644
Arg Gln His Lys Tyr Asn Ser Val Ile Pro Met Arg Pro Leu Asn Asn
        165                 170                 175

ccc ctt ccc cga gaa agg act ccc ttt gcc ctc caa acc atc aat gcc      692
Pro Leu Pro Arg Glu Arg Thr Pro Phe Ala Leu Gln Thr Ile Asn Ala
        180                 185                 190

tta gag gaa gaa agt cgt gga ttt cct aca caa gta gaa aga att ttt      740
Leu Glu Glu Glu Ser Arg Gly Phe Pro Thr Gln Val Glu Arg Ile Phe
195                 200                 205                 210
```

156

```
cag gag tct gtg tat aag aca caa caa act ata tgg aaa gag aca aga    788
Gln Glu Ser Val Tyr Lys Thr Gln Gln Thr Ile Trp Lys Glu Thr Arg
            215                 220                 225

aat atg gta caa aga caa ttt att gcc tgagatgaaa catataacat         835
Asn Met Val Gln Arg Gln Phe Ile Ala
            230             235
```

gtggctggct cttgttttgt aaaccaaatg attaatcttc acttgagaaa gcagtttcta 895

ggaaatgttt aaataaaaga gagtcttcac cttaaagaaa cctatggagc acaagaaaga 955

taaatttctg caggacagcc tataaaattg tggtactttt tgatgtttca gtaaacttga 1015

cattgtcaga gtttcaagga ctttttcttc acaattttcc tagttcatgg atatgaaaaa 1075

ggaattctca atccatattc cttgtattga accttgaaca aaaacttgta tgacagacat 1135

ttttaaaaat gtgacaacac ttttattctc tgaattttga tctcaaagga cacagaaaaa 1195

aaatggcccc aggagatctg atcacacttc ctcctgaggc acctctcatg gatgttgcaa 1255

taagcattcg ggtactatca cccagaaata tgaattgcca gaatagaaca tttagcatgt 1315

taagcgttga tgcatataaa atcagaaata gatgtgagaa tggtggaact ttttaaaaga 1375

acccagtcaa atgtattttc tgctgaaatc tgcatatttg gaggcatttc ccaccaccga 1435

ttcacagccc atttgatagt gtggtagtta gggacttcgt ggagtggtgt tcagacgtcc 1495

cctggggctt aaatctcttc atattagtca tcatttgtaa ctatggcttt atttgcagag 1555

cttctaaaag gcgtataact gtgtgagtgg ccagatattc actttttaga tcaaaaacct 1615

ctcttatgga agctttaaaa gtttccgtca cacacaattc tcttctcagg aagtatttct 1675

catttaggtc ttcaaagtag cctgactgtg tgcatgtgtg tgtgtgatag gttatttata 1735

aagactttgg atagaaggag atgtatttta ttacctccta ttctagagcc ccatgctcct 1795

aacaagccag agaggcccca aacaggattg tttctttcct ccacagccct tctgcccatc 1855

tgagattgag ggagcatcgt ccacttgaga tcagggatgg ggtggagaat gggtcatgtc 1915

atgtaatgag aaaagccctc ttcgggatca tgagacttgg ttctagtcca atttctgcca 1975

ctgaggatga atgtaactgt gggcaaacta tttaccctcc tttatctgtg aaatgaaagg 2035

gttgaattga tggatctcta aaggcttttg tcctctatga ggatgtgaaa aactagggac 2095

cacaaaaggg aacaagcaaa aaagtttgga ttcgataaag tgatatgtaa tagttgcaga 2155

aggctttata tatgcttata atgaaaagat attttttgta tattgacagc ataatttatt 2215

tttaatgctg tcattacact taaagtcaca ggaaaaaaat atacatgctt actcaggctt 2275

tcttaaaaat aaattttat agagatcctt gagtaaagac attttgctta atttcttttt 2335

tcttattccc cacttgtata tcccctacca gtaccgggat ctgcacacat cttttttgcag 2395

ttacctcttc atagccatga accaaaacgt tctatgagga gcatgcaagt aagtcaagcc 2455

tcctattctg ttagtactta ttagaggagg agatggtttt cattgcatag tgacattttc 2515

ttagccttaa cgttctgata gtagcttact actcacttct cttttttcagt tttcataata 2575

agtattcatt tttttgccat aatgcttcct gtaaagccaa ttttatatac taataaaaca 2635

tgaactgccc actcttcatg cctgccaaac ttggggcaat tgatgctaaa tggtattttt 2695

aaaataaatg tttttattct tt· 2717

<210> 89
<211> 245
<212> PRT
<213> Homo sapiens

<400> 89
Met Ala Ser Pro Ser Arg Arg Leu Gln Thr Lys Pro Val Ile Thr Cys
  1   5   10   15

Phe Lys Ser Val Leu Leu Ile Tyr Thr Phe Ile Phe Trp Ile Thr Gly
            20   25   30

Val Ile Leu Leu Ala Val Gly Ile Trp Gly Lys Val Ser Leu Glu Asn
        35   40   45

Tyr Phe Ser Leu Leu Asn Glu Lys Ala Thr Asn Val Pro Phe Val Leu
      50   55   60

Ile Ala Thr Gly Thr Val Ile Ile Leu Leu Gly Thr Phe Gly Cys Phe
  65   70   75   80

Ala Thr Cys Arg Ala Ser Ala Trp Met Leu Lys Leu Tyr Ala Met Phe
                85   90   95

Leu Thr Leu Val Phe Leu Val Glu Leu Val Ala Ala Ile Val Gly Phe
            100   105   110

Val Phe Arg His Glu Ile Lys Asn Ser Phe Lys Asn Asn Tyr Glu Lys
            115   120   125

Ala Leu Lys Gln Tyr Asn Ser Thr Gly Asp Tyr Arg Ser His Ala Val
        130   135   140

Asp Lys Ile Gln Asn Thr Leu His Cys Cys Gly Val Thr Asp Tyr Arg
145   150   155   160

Asp Trp Thr Asp Thr Asn Tyr Tyr Ser Glu Lys Gly Phe Pro Lys Ser
                165   170   175

Cys Cys Lys Leu Glu Asp Cys Thr Pro Gln Arg Asp Ala Asp Lys Val
            180   185   190

158

```
Asn Asn Glu Gly Cys Phe Ile Lys Val Met Thr Ile Ile Glu Ser Glu
        195                 200                 205
```

```
Met Gly Val Val Ala Gly Ile Ser Phe Gly Val Ala Cys Phe Gln Leu
        210                 215                 220
```

```
Ile Gly Ile Phe Leu Ala Tyr Cys Leu Ser Arg Ala Ile Thr Asn Asn
225                 230                 235                 240
```

```
Gln Tyr Glu Ile Val
                245
```

```
<210> 90
<211> 1793
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (60)..(794)

<400> 90
gcgtctcgct ctctgtgttc caatcgcccg gtgcggtggt gcagggtctc gggctagtc   59
```

```
atg gcg tcc ccg tct cgg aga ctg cag act aaa cca gtc att act tgt   107
Met Ala Ser Pro Ser Arg Arg Leu Gln Thr Lys Pro Val Ile Thr Cys
  1               5                  10                  15
```

```
ttc aag agc gtt ctg cta atc tac act ttt att ttc tgg atc act ggc   155
Phe Lys Ser Val Leu Leu Ile Tyr Thr Phe Ile Phe Trp Ile Thr Gly
             20                  25                  30
```

```
gtt atc ctt ctt gca gtt ggc att tgg ggc aag gtg agc ctg gag aat   203
Val Ile Leu Leu Ala Val Gly Ile Trp Gly Lys Val Ser Leu Glu Asn
             35                  40                  45
```

```
tac ttt tct ctt tta aat gag aag gcc acc aat gtc ccc ttc gtg ctc   251
Tyr Phe Ser Leu Leu Asn Glu Lys Ala Thr Asn Val Pro Phe Val Leu
         50                  55                  60
```

```
att gct act ggt acc gtc att att ctt ttg ggc acc ttt ggt tgt ttt   299
Ile Ala Thr Gly Thr Val Ile Ile Leu Leu Gly Thr Phe Gly Cys Phe
 65                  70                  75                  80
```

```
gct acc tgc cga gct tct gca tgg atg cta aaa ctg tat gca atg ttt   347
Ala Thr Cys Arg Ala Ser Ala Trp Met Leu Lys Leu Tyr Ala Met Phe
                 85                  90                  95
```

```
ctg act ctc gtt ttt ttg gtc gaa ctg gtc gct gcc atc gta gga ttt   395
Leu Thr Leu Val Phe Leu Val Glu Leu Val Ala Ala Ile Val Gly Phe
                100                 105                 110
```

```
gtt ttc aga cat gag att aag aac agc ttt aag aat aat tat gag aag   443
Val Phe Arg His Glu Ile Lys Asn Ser Phe Lys Asn Asn Tyr Glu Lys
             115                 120                 125
```

159

```
gct ttg aag cag tat aac tct aca gga gat tat aga agc cat gca gta    491
Ala Leu Lys Gln Tyr Asn Ser Thr Gly Asp Tyr Arg Ser His Ala Val
    130                 135                 140

gac aag atc caa aat acg ttg cat tgt tgt ggt gtc acc gat tat aga    539
Asp Lys Ile Gln Asn Thr Leu His Cys Cys Gly Val Thr Asp Tyr Arg
145                 150                 155                 160

gat tgg aca gat act aat tat tac tca gaa aaa gga ttt cct aag agt    587
Asp Trp Thr Asp Thr Asn Tyr Tyr Ser Glu Lys Gly Phe Pro Lys Ser
                    165                 170                 175

tgc tgt aaa ctt gaa gat tgt act cca cag aga gat gca gac aaa gta    635
Cys Cys Lys Leu Glu Asp Cys Thr Pro Gln Arg Asp Ala Asp Lys Val
                180                 185                 190

aac aat gaa ggt tgt ttt ata aag gtg atg acc att ata gag tca gaa    683
Asn Asn Glu Gly Cys Phe Ile Lys Val Met Thr Ile Ile Glu Ser Glu
                195                 200                 205

atg gga gtc gtt gca gga att tcc ttt gga gtt gct tgc ttc caa ctg    731
Met Gly Val Val Ala Gly Ile Ser Phe Gly Val Ala Cys Phe Gln Leu
    210                 215                 220

att gga atc ttt ctc gcc tac tgc ctc tct cgt gcc ata aca aat aac    779
Ile Gly Ile Phe Leu Ala Tyr Cys Leu Ser Arg Ala Ile Thr Asn Asn
225                 230                 235                 240

cag tat gag ata gtg taacccaatg tatctgtggg cctattcctc tctaccttta    834
Gln Tyr Glu Ile Val
                245

aggacattta gggtcccccc tgtgaattag aaagttgctt ggctggagaa ctgacaacac 894

tacttactga tagaccaaaa aactacacca gtaggttgat tcaatcaaga tgtatgtaga 954

cctaaaacta caccaatagg ctgattcaat caagatccgt gctcgcagtg ggctgattca 1014

atcaagatgt atgtttgcta tgttctaagt ccaccttcta tcccattcat gttagatcgt 1074

tgaaaccctg tatccctctg aaacactgga agagctagta aattgtaaat gaagtaatac 1134

tgtgttcctc ttgactgtta tttttcttag tagggggcct ttggaaggca ctgtgaattt 1194

gctattttga tgtagtgtta caagatggaa aattgattcc tctgactttg ctattgatgt 1254

agtgtgatag aaaattcacc cctctgaact ggctccttcc cagtcaaggt tatctggttt 1314

gattgtataa tttgcaccaa gaagttaaaa tgttttatga ctctctgttc tgctgacagg 1374

cagagagtca cattgtgtaa tttaatttca gtcagtcaat agatggcatc cctcatcagg 1434

gttgccagat ggtgataaca gtgtaaggcc ttgggtctaa ggcatccacg actggaaggg 1494

actactgatg ttctgtgata catcaggttt cagcacacaa cttacatttc tttgcctcca 1554
```

160

aattgaggca tttattatga tgttcatact ttccctcttg tttgaaagtt tctaattatt 1614

aaatggtgtc ggaattgttg tattttcctt aggaattcag tggaacttat cttcattaaa 1674

tttagctggt accaggttga tatgacttgt caatattatg gtcaacttta agtcttagtt 1734

ttcgtttgtg cctttgatta ataagtataa ctcttataca ataaatactg ctttcctct 1793

<210> 91
<211> 180
<212> PRT
<213> Homo sapiens

<400> 91
Met Ala Ser Thr Ser Tyr Asp Tyr Cys Arg Val Pro Met Glu Asp Gly
 1   5   10   15

Asp Lys Arg Cys Lys Leu Leu Leu Gly Ile Gly Ile Leu Val Leu Leu
            20   25   30

Ile Ile Val Ile Leu Gly Val Pro Leu Ile Ile Phe Thr Ile Lys Ala
        35   40   45

Asn Ser Glu Ala Cys Arg Asp Gly Leu Arg Ala Val Met Glu Cys Arg
    50   55   60

Asn Val Thr His Leu Leu Gln Gln Glu Leu Thr Glu Ala Gln Lys Gly
65   70   75   80

Phe Gln Asp Val Glu Ala Gln Ala Ala Thr Cys Asn His Thr Val Met
                85   90   95

Ala Leu Met Ala Ser Leu Asp Ala Glu Lys Ala Gln Gly Gln Lys Lys
            100   105   110

Val Glu Glu Leu Glu Gly Glu Ile Thr Thr Leu Asn His Lys Leu Gln
            115   120   125

Asp Ala Ser Ala Glu Val Glu Arg Leu Arg Arg Glu Asn Gln Val Leu
    130   135   140

Ser Val Arg Ile Ala Asp Lys Lys Tyr Tyr Pro Ser Ser Gln Asp Ser
145   150   155   160

Ser Ser Ala Ala Ala Pro Gln Leu Leu Ile Val Leu Leu Gly Leu Ser
                165   170   175

Ala Leu Leu Gln
            180

<210> 92
<211> 970
<212> DNA
<213> Homo sapiens

161

<220>
<221> CDS
<222> (26)..(565)

<400> 92

```
tttttcagct aaagggagaa tctgg atg gca tct act tcg tat gac tat tgc    52
                             Met Ala Ser Thr Ser Tyr Asp Tyr Cys
                              1               5
```

```
aga gtg ccc atg gaa gac ggg gat aag cgc tgt aag ctt ctg ctg ggg   100
Arg Val Pro Met Glu Asp Gly Asp Lys Arg Cys Lys Leu Leu Leu Gly
 10              15              20                          25
```

```
ata gga att ctg gtg ctc ctg atc atc gtg att ctg ggg gtg ccc ttg   148
Ile Gly Ile Leu Val Leu Leu Ile Ile Val Ile Leu Gly Val Pro Leu
                30              35              40
```

```
att atc ttc acc atc aag gcc aac agc gag gcc tgc cgg gac ggc ctt   196
Ile Ile Phe Thr Ile Lys Ala Asn Ser Glu Ala Cys Arg Asp Gly Leu
                45              50              55
```

```
cgg gca gtg atg gag tgt cgc aat gtc acc cat ctc ctg caa caa gag   244
Arg Ala Val Met Glu Cys Arg Asn Val Thr His Leu Leu Gln Gln Glu
            60              65              70
```

```
ctg acc gag gcc cag aag ggc ttt cag gat gtg gag gcc cag gct gcc   292
Leu Thr Glu Ala Gln Lys Gly Phe Gln Asp Val Glu Ala Gln Ala Ala
     75              80              85
```

```
acc tgc aac cac act gtg atg gcc cta atg gct tcc ctg gat gca gag   340
Thr Cys Asn His Thr Val Met Ala Leu Met Ala Ser Leu Asp Ala Glu
 90              95              100             105
```

```
aag gcc caa gga caa aag aaa gtg gag gag ctt gag gga gag atc act   388
Lys Ala Gln Gly Gln Lys Lys Val Glu Glu Leu Glu Gly Glu Ile Thr
                110             115             120
```

```
aca tta aac cat aag ctt cag gac gcg tct gca gag gtg gag cga ctg   436
Thr Leu Asn His Lys Leu Gln Asp Ala Ser Ala Glu Val Glu Arg Leu
                125             130             135
```

```
aga aga gaa aac cag gtc tta agc gtg aga atc gcg gac aag aag tac   484
Arg Arg Glu Asn Gln Val Leu Ser Val Arg Ile Ala Asp Lys Lys Tyr
            140             145             150
```

```
tac ccc agc tcc cag gac tcc agc tcc gct gcg gcg ccc cag ctg ctg   532
Tyr Pro Ser Ser Gln Asp Ser Ser Ser Ala Ala Ala Pro Gln Leu Leu
     155             160             165
```

```
att gtg ctg ctg ggc ctc agc gct ctg ctg cag tgagatccca ggaagctggc  585
Ile Val Leu Leu Gly Leu Ser Ala Leu Leu Gln
170             175             180
```

```
acatcttgga aggtccgtcc tgctcggctt ttcgcttgaa cattcccttg atctcatcag  645
```

```
ttctgagcgg gtcatggggc aacacggtta gcggggagag cacggggtag ccggagaagg  705
```

162

```
gcctctggag caggtctgga ggggccatgg ggcagtcctg ggtgtgggga cacagtcggg 765

ttgacccagg gctgtctccc tccagagcct ccctccggac aatgagtccc ccctcttgtc 825

tcccaccctg agattgggca tggggtgcgg tgtggggggc atgtgctgcc tgttgttatg 885

ggtttttttt gcggggggggg ttgctttttt ctggggtctt tgagctccaa aaaataaaca 945

cttcctttga gggagagcac acctt                                       970
```

<210> 93
<211> 331
<212> PRT
<213> Homo sapiens

<400> 93

```
Met Asp Ser Glu Lys Lys Arg Phe Thr Glu Glu Ala Thr Lys Tyr Phe
 1               5                  10                  15

Arg Glu Arg Val Ser Pro Val His Leu Gln Ile Leu Leu Thr Asn Asn
            20                  25                  30

Glu Ala Trp Lys Arg Phe Val Thr Ala Ala Glu Leu Pro Arg Asp Glu
        35                  40                  45

Ala Asp Ala Leu Tyr Glu Ala Leu Lys Lys Leu Arg Thr Tyr Ala Ala
    50                  55                  60

Ile Glu Asp Glu Tyr Val Gln Gln Lys Asp Glu Gln Phe Arg Glu Trp
65                  70                  75                  80

Phe Leu Lys Glu Phe Pro Gln Val Lys Arg Lys Ile Gln Glu Ser Ile
            85                  90                  95

Glu Lys Leu Arg Ala Leu Ala Asn Gly Ile Glu Glu Val His Arg Gly
            100                 105                 110

Cys Thr Ile Ser Asn Val Val Ser Ser Ser Thr Gly Ala Ala Ser Gly
        115                 120                 125

Ile Met Ser Leu Ala Gly Leu Val Leu Ala Pro Phe Thr Ala Gly Thr
    130                 135                 140

Ser Leu Ala Leu Thr Ala Ala Gly Val Gly Leu Gly Ala Ala Ser Ala
145                 150                 155                 160

Val Thr Gly Ile Thr Thr Ser Ile Val Glu His Ser Tyr Thr Ser Ser
            165                 170                 175

Ala Glu Ala Glu Ala Ser Arg Leu Thr Ala Thr Ser Ile Asp Arg Leu
            180                 185                 190

Lys Val Phe Lys Glu Val Met Arg Asp Ile Thr Pro Asn Leu Leu Ser
            195                 200                 205

Leu Leu Asn Asn Tyr Tyr Glu Ala Thr Gln Thr Ile Gly Ser Glu Ile
```

163

```
        210                  215                  220

Arg Ala Ile Arg Gln Ala Arg Ala Arg Ala Arg Leu Pro Val Thr Thr
225              230              235              240

Trp Arg Ile Ser Ala Gly Ser Gly Gly Gln Ala Glu Arg Thr Ile Ala
             245              250              255

Gly Thr Thr Arg Ala Val Ser Arg Gly Ala Arg Ile Leu Ser Ala Thr
         260              265              270

Thr Ser Gly Ile Phe Leu Ala Leu Asp Val Val Asn Leu Val Tyr Glu
         275              280              285

Ser Lys His Leu His Glu Gly Ala Lys Ser Ala Ser Ala Glu Glu Leu
     290              295              300

Arg Arg Gln Ala Gln Glu Leu Glu Glu Asn Leu Met Glu Leu Thr Gln
305              310              315              320

Ile Tyr Gln Arg Leu Asn Pro Cys His Thr His
             325              330
```

```
<210> 94
<211> 2039
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (175)..(1167)

<400> 94
attatgcaga tgcacggctg gaggtgggat ccacacagct cagaacagct ggatcttgct 60

cacactcttt caagagaagc ttccttgggt taagaaaaaa aacgaaccct tccagtcagg 120

tcagtgactg gagagctcca aggaaagtct ctcagtgacc tggctgctgg cacc atg    177
                                                              Met
                                                               1

gac tca gaa aag aaa cgc ttt act gaa gag gcc acc aaa tac ttc cgg   225
Asp Ser Glu Lys Lys Arg Phe Thr Glu Glu Ala Thr Lys Tyr Phe Arg
             5                  10                  15

gag aga gtc agc cca gtg cat ctg caa atc ctg ctg act aac aat gaa   273
Glu Arg Val Ser Pro Val His Leu Gln Ile Leu Leu Thr Asn Asn Glu
         20                  25                  30

gcc tgg aag aga ttc gtg act gcg gct gaa ttg ccc agg gat gag gca   321
Ala Trp Lys Arg Phe Val Thr Ala Ala Glu Leu Pro Arg Asp Glu Ala
     35                  40                  45

gat gct ctc tac gaa gct ctg aag aag ctt aga aca tat gca gct att   369
Asp Ala Leu Tyr Glu Ala Leu Lys Lys Leu Arg Thr Tyr Ala Ala Ile
 50                  55                  60                  65
```

164

```
gag gac gaa tat gtg cag cag aaa gat gag cag ttt agg gaa tgg ttt    417
Glu Asp Glu Tyr Val Gln Gln Lys Asp Glu Gln Phe Arg Glu Trp Phe
                70                  75                  80

ttg aaa gag ttt ccc caa gtc aag agg aag atc cag gag tcc ata gaa    465
Leu Lys Glu Phe Pro Gln Val Lys Arg Lys Ile Gln Glu Ser Ile Glu
            85                  90                  95

aag ctt cgt gcc ctt gca aat ggt att gaa gag gtc cac aga ggc tgc    513
Lys Leu Arg Ala Leu Ala Asn Gly Ile Glu Glu Val His Arg Gly Cys
        100                 105                 110

acc atc tcc aac gtg gtg tcc agc tcc act ggc gct gcc tct ggc atc    561
Thr Ile Ser Asn Val Val Ser Ser Ser Thr Gly Ala Ala Ser Gly Ile
        115                 120                 125

atg tcc ctt gct ggt ctt gtt ttg gca cca ttt aca gca ggg acg agt    609
Met Ser Leu Ala Gly Leu Val Leu Ala Pro Phe Thr Ala Gly Thr Ser
130                 135                 140                 145

ctg gcc ctt act gca gct ggg gta ggg ctg gga gca gcg tct gct gtg    657
Leu Ala Leu Thr Ala Ala Gly Val Gly Leu Gly Ala Ala Ser Ala Val
            150                 155                 160

act ggg atc acc acc agc atc gtg gag cac tca tac aca tca tca gca    705
Thr Gly Ile Thr Thr Ser Ile Val Glu His Ser Tyr Thr Ser Ser Ala
            165                 170                 175

gaa gct gaa gcc agc agg ctg act gca acc agc att gac cga ttg aag    753
Glu Ala Glu Ala Ser Arg Leu Thr Ala Thr Ser Ile Asp Arg Leu Lys
            180                 185                 190

gta ttt aag gaa gtt atg cgt gac atc aca ccc aac tta ctt tcc ctt    801
Val Phe Lys Glu Val Met Arg Asp Ile Thr Pro Asn Leu Leu Ser Leu
        195                 200                 205

ctt aat aat tat tac gaa gcc aca caa acc att ggg agt gaa atc cgt    849
Leu Asn Asn Tyr Tyr Glu Ala Thr Gln Thr Ile Gly Ser Glu Ile Arg
210                 215                 220                 225

gcc atc agg caa gcc aga gcc agg gcc cga ctc cct gtg acc acc tgg    897
Ala Ile Arg Gln Ala Arg Ala Arg Ala Arg Leu Pro Val Thr Thr Trp
            230                 235                 240

cga atc tca gct gga agt ggt ggt caa gca gag aga acg att gca ggc    945
Arg Ile Ser Ala Gly Ser Gly Gly Gln Ala Glu Arg Thr Ile Ala Gly
            245                 250                 255

acc acc cgg gca gtg agc aga gga gcc cgg atc ctg agt gcg acc act    993
Thr Thr Arg Ala Val Ser Arg Gly Ala Arg Ile Leu Ser Ala Thr Thr
            260                 265                 270

tca ggc atc ttc ctt gca ctg gat gtg gtc aac ctt gta tac gag tca    1041
Ser Gly Ile Phe Leu Ala Leu Asp Val Val Asn Leu Val Tyr Glu Ser
        275                 280                 285
```

165

```
aag cac ttg cat gag ggg gca aag tct gca tct gct gag gag ctg agg   1089
Lys His Leu His Glu Gly Ala Lys Ser Ala Ser Ala Glu Glu Leu Arg
290               295               300               305

cgg cag gct cag gag ctg gag gag aat cta atg gag ctc act cag atc   1137
Arg Gln Ala Gln Glu Leu Glu Glu Asn Leu Met Glu Leu Thr Gln Ile
              310               315               320

tat cag cgt ctg aat cca tgc cat acc cac tgaccccaga ccagtgcagc     1187
Tyr Gln Arg Leu Asn Pro Cys His Thr His
              325               330

cagcagggga ggtgagccat acacaggcca cgacaaaatg caggcatttt attagggga 1247

taaagagggc aaggtaaagt ttatggagct gagtgttagt gactttggca tttctgtagc 1307

tgagcacagc aggggagggg ttaatgcaga tggcaagtgc accaaggaga aggcaggaat 1367

gctggagcct ggaataaggg aggagagggg actggagagt gtggggaata ggaagaagaa 1427

atttccttta gactaacgaa tatattgggg ggaggaatag aggggaggtg tgcaggaacc 1487

agcaatgaga aggccaggaa aagaaagagc tgaaaatgca gaaagccgaa gagttagaac 1547

ttttggatac agcagaagaa acagcggctc cactaccgac ctgcccccgg ttcgatgtcc 1607

ttccaagaat gaagtctttc cctggtgatg gtccctgcc ctgtctttcc agcatccact 1667

ctgtcttgtc ctcctggaag tgtatctcag tcagccagtg gcttcttgat gatggcggtg 1727

gaggtggtgg ttgtagtgtg atggatcccc tttaggttat ttaggggtat atgtcccctg 1787

cttgaaccct gaaggccagg taatgagcca tggccattgt ccccagctga ggaccaggtg 1847

tctctaaaaa cccaaacatc ctggagagta tgcgagaacc taccaagaaa aacagtctca 1907

ttactcatat acagcaggca aagagacaga aaattaactg aaaagcagtt tagagactgg 1967

gggaggccgg atctctagag ccatcctgct gagtgccctg tgtgtaagtc ctaataaact 2027

cacctactca cc                                                     2039
```

<210> 95
<211> 407
<212> PRT
<213> Homo sapiens

<400> 95

```
Met Glu Leu Leu Glu Glu Asp Leu Thr Cys Pro Ile Cys Cys Ser Leu
  1               5                  10                  15

Phe Asp Asp Pro Arg Val Leu Pro Cys Ser His Asn Phe Cys Lys Lys
              20                  25                  30

Cys Leu Glu Gly Ile Leu Glu Gly Ser Val Arg Asn Ser Leu Trp Arg
          35                  40                  45
```

166

```
Pro Ala Pro Phe Lys Cys Pro Thr Cys Arg Lys Glu Thr Ser Ala Thr
    50                  55                  60

Gly Ile Asn Ser Leu Gln Val Asn Tyr Ser Leu Lys Gly Ile Val Glu
65                  70                  75                  80

Lys Tyr Asn Lys Ile Lys Ile Ser Pro Lys Met Pro Val Cys Lys Gly
                85                  90                  95

His Leu Gly Gln Pro Leu Asn Ile Phe Cys Leu Thr Asp Met Gln Leu
            100                 105                 110

Ile Cys Gly Ile Cys Ala Thr Arg Gly Glu His Thr Lys His Val Phe
            115                 120                 125

Cys Ser Ile Glu Asp Ala Tyr Ala Gln Glu Arg Asp Ala Phe Glu Ser
    130                 135                 140

Leu Phe Gln Ser Phe Glu Thr Trp Arg Arg Gly Asp Ala Leu Ser Arg
145                 150                 155                 160

Leu Asp Thr Leu Glu Thr Ser Lys Arg Lys Ser Leu Gln Leu Leu Thr
            165                 170                 175

Lys Asp Ser Asp Lys Val Lys Glu Phe Phe Glu Lys Leu Gln His Thr
            180                 185                 190

Leu Asp Gln Lys Lys Asn Glu Ile Leu Ser Asp Phe Glu Thr Met Lys
            195                 200                 205

Leu Ala Val Met Gln Ala Tyr Asp Pro Glu Ile Asn Lys Leu Asn Thr
    210                 215                 220

Ile Leu Gln Glu Gln Arg Met Ala Phe Asn Ile Ala Glu Ala Phe Lys
225                 230                 235                 240

Asp Val Ser Glu Pro Ile Val Phe Leu Gln Gln Met Gln Glu Phe Arg
            245                 250                 255

Glu Lys Ile Lys Val Ile Lys Glu Thr Pro Leu Pro Pro Ser Asn Leu
            260                 265                 270

Pro Ala Ser Pro Leu Met Lys Asn Phe Asp Thr Ser Gln Trp Glu Asp
            275                 280                 285

Ile Lys Leu Val Asp Val Asp Lys Leu Ser Leu Pro Gln Asp Thr Gly
    290                 295                 300

Thr Phe Ile Ser Lys Ile Pro Trp Ser Phe Tyr Lys Leu Phe Leu Leu
305                 310                 315                 320

Ile Leu Leu Leu Gly Leu Val Ile Val Phe Gly Pro Thr Met Phe Leu
            325                 330                 335

Glu Trp Ser Leu Phe Asp Asp Leu Ala Thr Trp Lys Gly Cys Leu Ser
            340                 345                 350
```

```
Asn Phe Ser Ser Tyr Leu Thr Lys Thr Ala Asp Phe Ile Glu Gln Ser
        355                 360                 365

Val Phe Tyr Trp Glu Gln Val Thr Asp Gly Phe Phe Ile Phe Asn Glu
        370                 375                 380

Arg Phe Lys Asn Phe Thr Leu Val Val Leu Asn Asn Val Ala Glu Phe
385                     390                 395                 400

Val Cys Lys Tyr Lys Leu Leu
                405
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<210> 96
<211> 1409
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (181)..(1401)

<400> 96

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gctgtgcttg gcgcgtaccg tgcggtccct gtagttggag gacgggcggt cgcgcggcct 60

ttcccactag ccggagtagc ctctagttcg ttagtcaaaa cgtgaaaaaa aaagacctgc 120

tttgccctgg gaaatagtaa ccctgccaaa tacatcagct tgtaggagac agaggatgtg 180

atg gag ctg ctt gaa gaa gat ctc aca tgc cct att tgt tgt agt ctg      228
Met Glu Leu Leu Glu Glu Asp Leu Thr Cys Pro Ile Cys Cys Ser Leu
 1               5                   10                  15

ttt gat gat cca cgg gtt ttg cct tgc tcc cac aac ttc tgc aaa aaa      276
Phe Asp Asp Pro Arg Val Leu Pro Cys Ser His Asn Phe Cys Lys Lys
            20                  25                  30

tgc tta gaa ggt atc tta gaa ggg agt gtg cgg aat tcc ttg tgg aga      324
Cys Leu Glu Gly Ile Leu Glu Gly Ser Val Arg Asn Ser Leu Trp Arg
        35                  40                  45

cca gct cca ttc aag tgt cct aca tgc cgt aag gaa act tca gct act      372
Pro Ala Pro Phe Lys Cys Pro Thr Cys Arg Lys Glu Thr Ser Ala Thr
    50                  55                  60

gga att aat agc ctg cag gtt aat tac tcc ctg aag ggt att gtg gaa      420
Gly Ile Asn Ser Leu Gln Val Asn Tyr Ser Leu Lys Gly Ile Val Glu
65                  70                  75                  80

aag tat aac aag atc aag atc tct ccc aaa atg cca gta tgc aaa gga      468
Lys Tyr Asn Lys Ile Lys Ile Ser Pro Lys Met Pro Val Cys Lys Gly
                85                  90                  95

cac ttg ggg cag cct ctc aac att ttc tgc ctg act gat atg cag ctg      516
His Leu Gly Gln Pro Leu Asn Ile Phe Cys Leu Thr Asp Met Gln Leu
            100                 105                 110
```

168

```
att tgt ggg atc tgt gct act cgt ggg gag cac acc aaa cat gtc ttc    564
Ile Cys Gly Ile Cys Ala Thr Arg Gly Glu His Thr Lys His Val Phe
        115                 120                 125

tgt tct att gaa gat gcc tat gct cag gaa agg gat gcc ttt gag tcc    612
Cys Ser Ile Glu Asp Ala Tyr Ala Gln Glu Arg Asp Ala Phe Glu Ser
    130                 135                 140

ctc ttc cag agc ttt gag acc tgg cgt cgg gga gat gct ctt tct cgc    660
Leu Phe Gln Ser Phe Glu Thr Trp Arg Arg Gly Asp Ala Leu Ser Arg
145                 150                 155                 160

ttg gat acc ttg gaa act agt aag agg aaa tcc cta cag tta ctg act    708
Leu Asp Thr Leu Glu Thr Ser Lys Arg Lys Ser Leu Gln Leu Leu Thr
                165                 170                 175

aaa gat tca gat aaa gtg aag gaa ttt ttt gag aag tta caa cac aca    756
Lys Asp Ser Asp Lys Val Lys Glu Phe Phe Glu Lys Leu Gln His Thr
            180                 185                 190

ctg gat caa aag aag aat gaa att ctg tct gac ttt gag acc atg aaa    804
Leu Asp Gln Lys Lys Asn Glu Ile Leu Ser Asp Phe Glu Thr Met Lys
        195                 200                 205

ctt gct gtt atg caa gca tat gac cca gag atc aac aaa ctc aac acc    852
Leu Ala Val Met Gln Ala Tyr Asp Pro Glu Ile Asn Lys Leu Asn Thr
    210                 215                 220

atc ttg cag gag caa cgg atg gcc ttt aac att gct gag gct ttc aaa    900
Ile Leu Gln Glu Gln Arg Met Ala Phe Asn Ile Ala Glu Ala Phe Lys
225                 230                 235                 240

gat gtg tca gaa ccc att gta ttt ctg caa cag atg cag gag ttt aga    948
Asp Val Ser Glu Pro Ile Val Phe Leu Gln Gln Met Gln Glu Phe Arg
                245                 250                 255

gag aaa atc aaa gta atc aag gaa act cct tta cct ccc tct aat ttg    996
Glu Lys Ile Lys Val Ile Lys Glu Thr Pro Leu Pro Pro Ser Asn Leu
                260                 265                 270

cct gca agc cct tta atg aag aac ttt gat acc agt cag tgg gaa gac    1044
Pro Ala Ser Pro Leu Met Lys Asn Phe Asp Thr Ser Gln Trp Glu Asp
        275                 280                 285

ata aaa cta gtc gat gtg gat aaa ctt tct ttg cct caa gac act ggc    1092
Ile Lys Leu Val Asp Val Asp Lys Leu Ser Leu Pro Gln Asp Thr Gly
    290                 295                 300

aca ttc att agc aag att ccc tgg agc ttt tat aag tta ttt ttg cta    1140
Thr Phe Ile Ser Lys Ile Pro Trp Ser Phe Tyr Lys Leu Phe Leu Leu
305                 310                 315                 320

atc ctt ctg ctt ggc ctt gtc att gtc ttt ggt cct acc atg ttc cta    1188
Ile Leu Leu Leu Gly Leu Val Ile Val Phe Gly Pro Thr Met Phe Leu
                325                 330                 335
```

169

```
gaa tgg tca tta ttt gat gac ctg gca act tgg aaa ggc tgt ctt tca    1236
Glu Trp Ser Leu Phe Asp Asp Leu Ala Thr Trp Lys Gly Cys Leu Ser
            340                 345                 350

aac ttc agt tcc tat ctg act aaa aca gcc gat ttc ata gaa caa tca    1284
Asn Phe Ser Ser Tyr Leu Thr Lys Thr Ala Asp Phe Ile Glu Gln Ser
            355                 360                 365

gtt ttt tac tgg gaa cag gtg aca gat ggg ttt ttc att ttc aat gaa    1332
Val Phe Tyr Trp Glu Gln Val Thr Asp Gly Phe Phe Ile Phe Asn Glu
            370                 375                 380

aga ttc aag aat ttt act ttg gtg gta ctg aac aat gtg gca gaa ttt    1380
Arg Phe Lys Asn Phe Thr Leu Val Val Leu Asn Asn Val Ala Glu Phe
385                 390                 395                 400

gtg tgc aaa tat aaa cta tta taaaatcg                                1409
Val Cys Lys Tyr Lys Leu Leu
            405
```

<210> 97
<211> 465
<212> PRT
<213> Homo sapiens

<400> 97

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Met Ala Ser Thr Thr Ser Thr Lys Lys Met Met Glu Glu Ala Thr Cys
  1               5                  10                  15

Ser Ile Cys Leu Ser Leu Met Thr Asn Pro Val Ser Ile Asn Cys Gly
            20                  25                  30

His Ser Tyr Cys His Leu Cys Ile Thr Asp Phe Phe Lys Asn Pro Ser
            35                  40                  45

Gln Lys Gln Leu Arg Gln Glu Thr Phe Cys Cys Pro Gln Cys Arg Ala
      50                  55                  60

Pro Phe His Met Asp Ser Leu Arg Pro Asn Lys Gln Leu Gly Ser Leu
65                  70                  75                  80

Ile Glu Ala Leu Lys Glu Thr Asp Gln Glu Met Ser Cys Glu Glu His
                  85                  90                  95

Gly Glu Gln Phe His Leu Phe Cys Glu Asp Glu Gly Gln Leu Ile Cys
            100                 105                 110

Trp Arg Cys Glu Arg Ala Pro Gln His Lys Gly His Thr Thr Ala Leu
            115                 120                 125

Val Glu Asp Val Cys Gln Gly Tyr Lys Glu Lys Leu Gln Glu Ala Val
      130                 135                 140

Thr Lys Leu Lys Gln Leu Glu Asp Arg Cys Thr Glu Gln Lys Leu Ser
145                 150                 155                 160
```

```
Thr Ala Met Arg Ile Thr Lys Trp Lys Glu Lys Val Gln Ile Gln Arg
            165                 170                 175

Gln Lys Ile Arg Ser Asp Phe Lys Asn Leu Gln Cys Phe Leu His Glu
            180                 185                 190

Glu Glu Lys Ser Tyr Leu Trp Arg Leu Glu Lys Glu Glu Gln Gln Thr
            195                 200                 205

Leu Ser Arg Leu Arg Asp Tyr Glu Ala Gly Leu Gly Leu Lys Ser Asn
    210                 215                 220

Glu Leu Lys Ser His Ile Leu Glu Leu Glu Glu Lys Cys Gln Gly Ser
225                 230                 235                 240

Ala Gln Lys Leu Leu Gln Asn Val Asn Asp Thr Leu Ser Arg Ser Trp
            245                 250                 255

Ala Val Lys Leu Glu Thr Ser Glu Ala Val Ser Leu Glu Leu His Thr
            260                 265                 270

Met Cys Asn Val Ser Lys Leu Tyr Phe Asp Val Lys Lys Met Leu Arg
            275                 280                 285

Ser His Gln Val Ser Val Thr Leu Asp Pro Asp Thr Ala His His Glu
    290                 295                 300

Leu Ile Leu Ser Glu Asp Arg Arg Gln Val Thr Arg Gly Tyr Thr Gln
305                 310                 315                 320

Glu Asn Gln Asp Thr Ser Ser Arg Arg Phe Thr Ala Phe Pro Cys Val
            325                 330                 335

Leu Gly Cys Glu Gly Phe Thr Ser Gly Arg Arg Tyr Phe Glu Val Asp
            340                 345                 350

Val Gly Glu Gly Thr Gly Trp Asp Leu Gly Val Cys Met Glu Asn Val
            355                 360                 365

Gln Arg Gly Thr Gly Met Lys Gln Glu Pro Gln Ser Gly Phe Trp Thr
    370                 375                 380

Leu Arg Leu Cys Lys Lys Lys Gly Tyr Val Ala Leu Thr Ser Pro Pro
385                 390                 395                 400

Thr Ser Leu His Leu His Glu Gln Pro Leu Leu Val Gly Ile Phe Leu
            405                 410                 415

Asp Tyr Glu Ala Gly Val Val Ser Phe Tyr Asn Gly Asn Thr Gly Cys
            420                 425                 430

His Ile Phe Thr Phe Pro Lys Ala Ser Phe Ser Asp Thr Leu Arg Pro
            435                 440                 445

Tyr Phe Gln Val Tyr Gln Tyr Ser Pro Leu Phe Leu Pro Pro Pro Gly
    450                 455                 460
```

171

Asp
465

<210> 98
<211> 1940
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (477)..(1871)

<400> 98
gttaacttcc tgacccagga agtggcagca acagagggga ctagcagcga atatacttta 60

caccaaatct cagaagattc agaacttaga tgagtggggc ccaggacagg aaccctggag 120

ccttggaagg aggggagccc catctcccca gaagagcagt gaccccagca gagagggggcc 180

tggtgtatca ctggaggaaa tagcctgcca aggaatacac gtcttcagaa gaagttctgt 240

gtggcttcaa gagactgatc aaattgtgag aggaaaacag cctacccggt cctcttttct 300

tcaatacaaa atgagataat aggggttgga aggaaaacct tcaagaccta tggaagtcag 360

ttgcagccag ctcatcacat agaggtgcag gtgaggtgta ttttcatcac ggtggaaaat 420

tctggctgct tcatctccat ctctagagcc aatattggag cttttcaata aaagct atg 479
                                                            Met
                                                             1

gcc tca acc acc agc acc aag aag atg atg gag gaa gcc acc tgc tcc   527
Ala Ser Thr Thr Ser Thr Lys Lys Met Met Glu Glu Ala Thr Cys Ser
              5   10   15

atc tgc ctg agc ctg atg acg aac cca gta agc atc aac tgt gga cac   575
Ile Cys Leu Ser Leu Met Thr Asn Pro Val Ser Ile Asn Cys Gly His
         20   25   30

agc tac tgc cac ttg tgt ata aca gac ttc ttt aaa aac cca agc caa   623
Ser Tyr Cys His Leu Cys Ile Thr Asp Phe Phe Lys Asn Pro Ser Gln
     35   40   45

aag caa ctg agg cag gag aca ttc tgc tgt ccc cag tgt cgg gct cca   671
Lys Gln Leu Arg Gln Glu Thr Phe Cys Cys Pro Gln Cys Arg Ala Pro
 50   55   60   65

ttt cat atg gat agc ctc cga ccc aac aag cag ctg gga agc ctc att   719
Phe His Met Asp Ser Leu Arg Pro Asn Lys Gln Leu Gly Ser Leu Ile
                 70   75   80

gaa gcc ctc aaa gag acg gat caa gaa atg tca tgt gag gaa cac gga   767
Glu Ala Leu Lys Glu Thr Asp Gln Glu Met Ser Cys Glu Glu His Gly
             85   90   95

gag cag ttc cac ctg ttc tgc gaa gac gag ggg cag ctc atc tgc tgg   815

172

```
Glu Gln Phe His Leu Phe Cys Glu Asp Glu Gly Gln Leu Ile Cys Trp
        100                 105                 110

cgc tgt gag cgg gca cca cag cac aaa ggg cac acc aca gct ctt gtt      863
Arg Cys Glu Arg Ala Pro Gln His Lys Gly His Thr Thr Ala Leu Val
        115                 120                 125

gaa gac gta tgc cag ggc tac aag gaa aag ctc cag gaa gct gtg aca      911
Glu Asp Val Cys Gln Gly Tyr Lys Glu Lys Leu Gln Glu Ala Val Thr
130                 135                 140                 145

aaa ctg aag caa ctt gaa gac aga tgt acg gag cag aag ctg tcc aca      959
Lys Leu Lys Gln Leu Glu Asp Arg Cys Thr Glu Gln Lys Leu Ser Thr
                150                 155                 160

gca atg cga ata act aaa tgg aaa gag aag gta cag att cag aga caa     1007
Ala Met Arg Ile Thr Lys Trp Lys Glu Lys Val Gln Ile Gln Arg Gln
                165                 170                 175

aaa atc cgg tct gac ttt aag aat ctc cag tgt ttc cta cat gag gaa     1055
Lys Ile Arg Ser Asp Phe Lys Asn Leu Gln Cys Phe Leu His Glu Glu
                180                 185                 190

gag aag tct tat ctc tgg agg ctg gag aaa gaa gaa caa cag act ctg     1103
Glu Lys Ser Tyr Leu Trp Arg Leu Glu Lys Glu Glu Gln Gln Thr Leu
        195                 200                 205

agt aga ctg agg gac tat gag gct ggt ctg ggg ctg aag agc aat gaa     1151
Ser Arg Leu Arg Asp Tyr Glu Ala Gly Leu Gly Leu Lys Ser Asn Glu
210                 215                 220                 225

ctc aag agc cac atc ctg gaa ctg gag gaa aaa tgt cag ggc tca gcc     1199
Leu Lys Ser His Ile Leu Glu Leu Glu Glu Lys Cys Gln Gly Ser Ala
                230                 235                 240

cag aaa ttg ctg cag aat gtg aat gac act ttg agc agg agt tgg gct     1247
Gln Lys Leu Leu Gln Asn Val Asn Asp Thr Leu Ser Arg Ser Trp Ala
                245                 250                 255

gtg aag ctg gaa aca tca gag gct gtc tcc ttg gaa ctt cat act atg     1295
Val Lys Leu Glu Thr Ser Glu Ala Val Ser Leu Glu Leu His Thr Met
                260                 265                 270

tgc aat gtt tcc aag ctt tac ttc gat gtg aag aaa atg tta agg agt     1343
Cys Asn Val Ser Lys Leu Tyr Phe Asp Val Lys Lys Met Leu Arg Ser
        275                 280                 285

cat caa gtt agt gtg act ctg gat cca gat aca gct cat cac gaa cta     1391
His Gln Val Ser Val Thr Leu Asp Pro Asp Thr Ala His His Glu Leu
290                 295                 300                 305

att ctc tct gag gat cgg aga caa gtg act cgt gga tac acc cag gag     1439
Ile Leu Ser Glu Asp Arg Arg Gln Val Thr Arg Gly Tyr Thr Gln Glu
                310                 315                 320

aat cag gac aca tct tcc agg aga ttt act gcc ttc ccc tgt gtc ttg     1487
Asn Gln Asp Thr Ser Ser Arg Arg Phe Thr Ala Phe Pro Cys Val Leu
```

173

```
                    325                        330                        335
ggt tgt gaa ggc ttc acc tca gga aga cgt tac ttt gaa gtg gat gtt   1535
Gly Cys Glu Gly Phe Thr Ser Gly Arg Arg Tyr Phe Glu Val Asp Val
        340                        345                        350

ggc gaa gga acc gga tgg gat tta gga gtt tgt atg gaa aat gtg cag   1583
Gly Glu Gly Thr Gly Trp Asp Leu Gly Val Cys Met Glu Asn Val Gln
        355                        360                        365

agg ggc act ggc atg aag caa gag cct cag tct gga ttc tgg acc ctc   1631
Arg Gly Thr Gly Met Lys Gln Glu Pro Gln Ser Gly Phe Trp Thr Leu
370                        375                        380                385

agg ctg tgc aaa aag aaa ggc tat gta gca ctt act tct ccc cca act   1679
Arg Leu Cys Lys Lys Lys Gly Tyr Val Ala Leu Thr Ser Pro Pro Thr
                390                        395                        400

tcc ctt cat ctg cat gag cag ccc ctg ctt gtg gga att ttt ctg gac   1727
Ser Leu His Leu His Glu Gln Pro Leu Leu Val Gly Ile Phe Leu Asp
            405                        410                        415

tat gag gcc gga gtt gta tcc ttt tat aac ggg aat act ggc tgc cac   1775
Tyr Glu Ala Gly Val Val Ser Phe Tyr Asn Gly Asn Thr Gly Cys His
        420                        425                        430

atc ttt act ttc ccg aag gct tcc ttc tct gat act ctc cgg ccc tat   1823
Ile Phe Thr Phe Pro Lys Ala Ser Phe Ser Asp Thr Leu Arg Pro Tyr
        435                        440                        445

ttc cag gtt tat caa tat tct cct ttg ttt ctg cct ccc cca ggt gac   1871
Phe Gln Val Tyr Gln Tyr Ser Pro Leu Phe Leu Pro Pro Pro Gly Asp
450                        455                        460                465

taaggaaaag agcagaagct ccttggttta accagcacag agaaataat ataaatccca 1931

taagggcag                                                          1940


<210> 99
<211> 465
<212> PRT
<213> Homo sapiens

<400> 99
Met Ala Ser Thr Thr Ser Thr Lys Lys Met Met Glu Glu Ala Thr Cys
 1               5                  10                        15

Ser Ile Cys Leu Ser Leu Met Thr Asn Pro Val Ser Ile Asn Cys Gly
            20                  25                        30

His Ser Tyr Cys His Leu Cys Ile Thr Asp Phe Phe Lys Asn Pro Ser
            35                  40                        45

Gln Lys Gln Leu Arg Gln Glu Thr Phe Cys Cys Pro Gln Cys Arg Ala
        50                  55                        60
```

174

```
Pro Phe His Met Asp Ser Leu Arg Pro Asn Lys Gln Leu Gly Ser Leu
65                  70                  75                      80

Ile Glu Ala Leu Lys Glu Thr Asp Gln Glu Met Ser Cys Glu Glu His
                85                  90                  95

Gly Glu Gln Phe His Leu Phe Cys Glu Asp Glu Gly Gln Leu Ile Cys
            100                 105                 110

Trp Arg Cys Glu Arg Ala Pro Gln His Lys Gly His Thr Thr Ala Leu
        115                 120                 125

Val Glu Asp Val Cys Gln Gly Tyr Lys Glu Lys Leu Gln Lys Ala Val
    130                 135                 140

Thr Lys Leu Lys Gln Leu Glu Asp Arg Cys Thr Glu Gln Lys Leu Ser
145                 150                 155                 160

Thr Ala Met Arg Ile Thr Lys Trp Lys Glu Lys Val Gln Ile Gln Arg
                165                 170                 175

Gln Lys Ile Arg Ser Asp Phe Lys Asn Leu Gln Cys Phe Leu His Glu
            180                 185                 190

Glu Glu Lys Ser Tyr Leu Trp Arg Leu Glu Lys Glu Glu Gln Gln Thr
        195                 200                 205

Leu Ser Arg Leu Arg Asp Tyr Glu Ala Gly Leu Gly Leu Lys Ser Asn
    210                 215                 220

Glu Leu Lys Ser His Ile Leu Glu Leu Glu Glu Lys Cys Gln Gly Ser
225                 230                 235                 240

Ala Gln Lys Leu Leu Gln Asn Val Asn Asp Thr Leu Ser Arg Ser Trp
            245                 250                 255

Ala Val Lys Leu Glu Thr Ser Glu Ala Val Ser Leu Glu Leu His Thr
        260                 265                 270

Met Cys Asn Val Ser Lys Leu Tyr Phe Asp Val Lys Lys Met Leu Arg
        275                 280                 285

Ser His Gln Val Ser Val Thr Leu Asp Pro Asp Thr Ala His His Glu
    290                 295                 300

Leu Ile Leu Ser Glu Asp Arg Arg Gln Val Thr Arg Gly Tyr Thr Gln
305                 310                 315                 320

Glu Asn Gln Asp Thr Ser Ser Arg Arg Phe Thr Ala Phe Pro Cys Val
            325                 330                 335

Leu Gly Cys Glu Gly Phe Thr Ser Gly Arg Arg Tyr Phe Glu Val Asp
        340                 345                 350

Val Gly Glu Gly Thr Gly Trp Asp Leu Gly Val Cys Met Glu Asn Val
    355                 360                 365
```

175

```
Gln Arg Gly Thr Gly Met Lys Gln Glu Pro Gln Ser Gly Phe Trp Thr
    370                 375                 380

Leu Arg Leu Cys Lys Lys Lys Gly Tyr Val Ala Leu Thr Ser Pro Pro
385                 390                 395                 400

Thr Ser Leu His Leu His Glu Gln Pro Leu Leu Val Gly Ile Phe Leu
                405                 410                 415

Asp Tyr Glu Ala Gly Val Val Ser Phe Tyr Asn Gly Asn Thr Gly Cys
                420                 425                 430

His Ile Phe Thr Phe Pro Lys Ala Ser Phe Ser Asp Thr Leu Arg Pro
                435                 440                 445

Tyr Phe Gln Val Tyr Gln Tyr Ser Pro Leu Phe Leu Pro Pro Pro Gly
    450                 455                 460

Asp
465
```

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<210> 100
<211> 1940
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (477)..(1871)

<400> 100
gttaacttcc tgacccagga agtggcagca acagagggga ctagcagcga atatacttta  60

caccaaatct cagaagattc agaacttaga tgagtggggc ccaggacagg aaccctggag  120

ccttggaagg aggggagccc catctcccca gaagagcagt gaccccagca gagagggggcc  180

tggtgtatca ctggaggaaa tagcctgcca aggaatacac gtcttcagaa gaagttctgt  240

gtggcttcaa gagactgatc aaaattgtgag aggaaaacag cctacccggt cctctttct  300

tcaatacaaa atgagataat aggggttgga aggaaaacct tcaagaccta tggaagtcag  360

ttgcagccag ctcatcacat agaggtgcag gtgaggtgta ttttcatcac ggtggaaaat  420

tctggctgct tcatctccat ctctagagcc aatattggag cttttcaata aaagct atg  479
                                                                Met
                                                                  1
```

```
gcc tca acc acc agc acc aag aag atg atg gag gaa gcc acc tgc tcc  527
Ala Ser Thr Thr Ser Thr Lys Lys Met Met Glu Glu Ala Thr Cys Ser
            5                  10                 15

atc tgc ctg agc ctg atg acg aac cca gta agc atc aac tgt gga cac  575
Ile Cys Leu Ser Leu Met Thr Asn Pro Val Ser Ile Asn Cys Gly His
        20                  25                 30
```

176

```
agc tac tgc cac ttg tgt ata aca gac ttc ttt aaa aac cca agc caa    623
Ser Tyr Cys His Leu Cys Ile Thr Asp Phe Phe Lys Asn Pro Ser Gln
    35                      40                  45

aag caa ctg agg cag gag aca ttc tgc tgt ccc cag tgt cgg gct cca    671
Lys Gln Leu Arg Gln Glu Thr Phe Cys Cys Pro Gln Cys Arg Ala Pro
 50                      55                  60                  65

ttt cat atg gat agc ctc cga ccc aac aag cag ctg gga agc ctc att    719
Phe His Met Asp Ser Leu Arg Pro Asn Lys Gln Leu Gly Ser Leu Ile
                    70                  75                  80

gaa gcc ctc aaa gag acg gat caa gaa atg tca tgt gag gaa cac gga    767
Glu Ala Leu Lys Glu Thr Asp Gln Glu Met Ser Cys Glu Glu His Gly
                85                  90                  95

gag cag ttc cac ctg ttc tgc gaa gac gag ggg cag ctc atc tgc tgg    815
Glu Gln Phe His Leu Phe Cys Glu Asp Glu Gly Gln Leu Ile Cys Trp
            100                 105                 110

cgc tgt gag cgg gca cca cag cac aaa ggg cac acc aca gct ctt gtt    863
Arg Cys Glu Arg Ala Pro Gln His Lys Gly His Thr Thr Ala Leu Val
    115                 120                 125

gaa gac gta tgc cag ggc tac aag gaa aag ctc cag aaa gct gtg aca    911
Glu Asp Val Cys Gln Gly Tyr Lys Glu Lys Leu Gln Lys Ala Val Thr
130                 135                 140                 145

aaa ctg aag caa ctt gaa gac aga tgt acg gag cag aag ctg tcc aca    959
Lys Leu Lys Gln Leu Glu Asp Arg Cys Thr Glu Gln Lys Leu Ser Thr
                150                 155                 160

gca atg cga ata act aaa tgg aaa gag aag gta cag att cag aga caa    1007
Ala Met Arg Ile Thr Lys Trp Lys Glu Lys Val Gln Ile Gln Arg Gln
                165                 170                 175

aaa atc cgg tct gac ttt aag aat ctc cag tgt ttc cta cat gag gaa    1055
Lys Ile Arg Ser Asp Phe Lys Asn Leu Gln Cys Phe Leu His Glu Glu
                180                 185                 190

gag aag tct tat ctc tgg agg ctg gag aaa gaa gaa caa cag act ctg    1103
Glu Lys Ser Tyr Leu Trp Arg Leu Glu Lys Glu Glu Gln Gln Thr Leu
    195                 200                 205

agt aga ctg agg gac tat gag gct ggt ctg ggg ctg aag agc aat gaa    1151
Ser Arg Leu Arg Asp Tyr Glu Ala Gly Leu Gly Leu Lys Ser Asn Glu
210                 215                 220                 225

ctc aag agc cac atc ctg gaa ctg gag gaa aaa tgt cag ggc tca gcc    1199
Leu Lys Ser His Ile Leu Glu Leu Glu Glu Lys Cys Gln Gly Ser Ala
                230                 235                 240

cag aaa ttg ctg cag aat gtg aat gac act ttg agc agg agt tgg gct    1247
Gln Lys Leu Leu Gln Asn Val Asn Asp Thr Leu Ser Arg Ser Trp Ala
                245                 250                 255
```

177

```
gtg aag ctg gaa aca tca gag gct gtc tcc ttg gaa ctt cat act atg   1295
Val Lys Leu Glu Thr Ser Glu Ala Val Ser Leu Glu Leu His Thr Met
        260                 265                 270

tgc aat gtt tcc aag ctt tac ttc gat gtg aag aaa atg tta agg agt   1343
Cys Asn Val Ser Lys Leu Tyr Phe Asp Val Lys Lys Met Leu Arg Ser
        275                 280                 285

cat caa gtt agt gtg act ctg gat cca gat aca gct cat cac gaa cta   1391
His Gln Val Ser Val Thr Leu Asp Pro Asp Thr Ala His His Glu Leu
290                 295                 300                 305

att ctc tct gag gat cgg aga caa gtg act cgt gga tac acc cag gag   1439
Ile Leu Ser Glu Asp Arg Arg Gln Val Thr Arg Gly Tyr Thr Gln Glu
                310                 315                 320

aat cag gac aca tct tcc agg aga ttt act gcc ttc ccc tgt gtc ttg   1487
Asn Gln Asp Thr Ser Ser Arg Arg Phe Thr Ala Phe Pro Cys Val Leu
            325                 330                 335

ggt tgt gaa ggc ttc acc tca gga aga cgt tac ttt gaa gtg gat gtt   1535
Gly Cys Glu Gly Phe Thr Ser Gly Arg Arg Tyr Phe Glu Val Asp Val
        340                 345                 350

ggc gaa gga acc gga tgg gat tta gga gtt tgt atg gaa aat gtg cag   1583
Gly Glu Gly Thr Gly Trp Asp Leu Gly Val Cys Met Glu Asn Val Gln
        355                 360                 365

agg ggc act ggc atg aag caa gag cct cag tct gga ttc tgg acc ctc   1631
Arg Gly Thr Gly Met Lys Gln Glu Pro Gln Ser Gly Phe Trp Thr Leu
370                 375                 380                 385

agg ctg tgc aaa aag aaa ggc tat gta gca ctt act tct ccc cca act   1679
Arg Leu Cys Lys Lys Lys Gly Tyr Val Ala Leu Thr Ser Pro Pro Thr
            390                 395                 400

tcc ctt cat ctg cat gag cag ccc ctg ctt gtg gga att ttt ctg gac   1727
Ser Leu His Leu His Glu Gln Pro Leu Leu Val Gly Ile Phe Leu Asp
            405                 410                 415

tat gag gcc gga gtt gta tcc ttt tat aac ggg aat act ggc tgc cac   1775
Tyr Glu Ala Gly Val Val Ser Phe Tyr Asn Gly Asn Thr Gly Cys His
        420                 425                 430

atc ttt act ttc ccg aag gct tcc ttc tct gat act ctc cgg ccc tat   1823
Ile Phe Thr Phe Pro Lys Ala Ser Phe Ser Asp Thr Leu Arg Pro Tyr
    435                 440                 445

ttc cag gtt tat caa tat tct cct ttg ttt ctg cct ccc cca ggt gac   1871
Phe Gln Val Tyr Gln Tyr Ser Pro Leu Phe Leu Pro Pro Pro Gly Asp
450                 455                 460                 465

taaggaaaag agcagaagct ccttggttta accagcacag agaaaataat ataaatccca 1931

taagggcag                                                         1940
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<210> 101
<211> 685
<212> PRT
<213> Homo sapiens

<400> 101

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Met Glu Leu Leu Arg Thr Ile Thr Tyr Gln Pro Ala Ala Ser Thr Lys
 1               5                  10                  15

Met Cys Glu Gln Ala Leu Gly Lys Gly Cys Gly Ala Asp Ser Lys Lys
                20                  25                  30

Lys Arg Pro Pro Gln Pro Pro Glu Glu Ser Gln Pro Pro Gln Ser Gln
            35                  40                  45

Ala Gln Val Pro Pro Ala Ala Pro His His His His His His Ser His
        50                  55                  60

Ser Gly Pro Glu Ile Ser Arg Ile Ile Val Asp Pro Thr Thr Gly Lys
65                  70                  75                  80

Arg Tyr Cys Arg Gly Lys Val Leu Gly Lys Gly Gly Phe Ala Lys Cys
                85                  90                  95

Tyr Glu Met Thr Asp Leu Thr Asn Asn Lys Val Tyr Ala Ala Lys Ile
            100                 105                 110

Ile Pro His Ser Arg Val Ala Lys Pro His Gln Arg Glu Lys Ile Asp
            115                 120                 125

Lys Glu Ile Glu Leu His Arg Ile Leu His His Lys His Val Val Gln
    130                 135                 140

Phe Tyr His Tyr Phe Glu Asp Lys Glu Asn Ile Tyr Ile Leu Leu Glu
145                 150                 155                 160

Tyr Cys Ser Arg Arg Ser Met Ala His Ile Leu Lys Ala Arg Lys Val
                165                 170                 175

Leu Thr Glu Pro Glu Val Arg Tyr Tyr Leu Arg Gln Ile Val Ser Gly
            180                 185                 190

Leu Lys Tyr Leu His Glu Gln Glu Ile Leu His Arg Asp Leu Lys Leu
            195                 200                 205

Gly Asn Phe Phe Ile Asn Glu Ala Met Glu Leu Lys Val Gly Asp Phe
    210                 215                 220

Gly Leu Ala Ala Arg Leu Glu Pro Leu Glu His Arg Arg Arg Thr Ile
225                 230                 235                 240

Cys Gly Thr Pro Asn Tyr Leu Ser Pro Glu Val Leu Asn Lys Gln Gly
                245                 250                 255

His Gly Cys Glu Ser Asp Ile Trp Ala Leu Gly Cys Val Met Tyr Thr
            260                 265                 270
```

179

Met Leu Leu Gly Arg Pro Pro Phe Glu Thr Thr Asn Leu Lys Glu Thr
        275   280   285

Tyr Arg Cys Ile Arg Glu Ala Arg Tyr Thr Met Pro Ser Ser Leu Leu
    290   295   300

Ala Pro Ala Lys His Leu Ile Ala Ser Met Leu Ser Lys Asn Pro Glu
305   310   315   320

Asp Arg Pro Ser Leu Asp Asp Ile Ile Arg His Asp Phe Phe Leu Gln
            325   330   335

Gly Phe Thr Pro Asp Arg Leu Ser Ser Ser Cys Cys His Thr Val Pro
            340   345   350

Asp Phe His Leu Ser Ser Pro Ala Lys Asn Phe Phe Lys Lys Ala Ala
        355   360   365

Ala Ala Leu Phe Gly Gly Lys Lys Asp Lys Ala Arg Tyr Ile Asp Thr
    370   375   380

His Asn Arg Val Ser Lys Glu Asp Glu Asp Ile Tyr Lys Leu Arg His
385   390   395   400

Asp Leu Lys Lys Thr Ser Ile Thr Gln Gln Pro Ser Lys His Arg Thr
            405   410   415

Asp Glu Glu Leu Gln Pro Pro Thr Thr Thr Val Ala Arg Ser Gly Thr
            420   425   430

Pro Ala Val Glu Asn Lys Gln Gln Ile Gly Asp Ala Ile Arg Met Ile
        435   440   445

Val Arg Gly Thr Leu Gly Ser Cys Ser Ser Ser Ser Glu Cys Leu Glu
    450   455   460

Asp Ser Thr Met Gly Ser Val Ala Asp Thr Val Ala Arg Val Leu Arg
465   470   475   480

Gly Cys Leu Glu Asn Met Pro Glu Ala Asp Cys Ile Pro Lys Glu Gln
            485   490   495

Leu Ser Thr Ser Phe Gln Trp Val Thr Lys Trp Val Asp Tyr Ser Asn
            500   505   510

Lys Tyr Gly Phe Gly Tyr Gln Leu Ser Asp His Thr Val Gly Val Leu
            515   520   525

Phe Asn Asn Gly Ala His Met Ser Leu Leu Pro Asp Lys Lys Thr Val
    530   535   540

His Tyr Tyr Ala Glu Leu Gly Gln Cys Ser Val Phe Pro Ala Thr Asp
545   550   555   560

Ala Pro Glu Gln Phe Ile Ser Gln Val Thr Val Leu Lys Tyr Phe Ser
            565   570   575

180

```
His Tyr Met Glu Glu Asn Leu Met Asp Gly Gly Asp Leu Pro Ser Val
        580              585              590

Thr Asp Ile Arg Arg Pro Arg Leu Tyr Leu Leu Gln Trp Leu Lys Ser
        595          600              605

Asp Lys Ala Leu Met Met Leu Phe Asn Asp Gly Thr Phe Gln Val Asn
    610              615              620

Phe Tyr His Asp His Thr Lys Ile Ile Ile Cys Ser Gln Asn Glu Glu
625              630              635              640

Tyr Leu Leu Thr Tyr Ile Asn Glu Asp Arg Ile Ser Thr Thr Phe Arg
            645              650              655

Leu Thr Thr Leu Leu Met Ser Gly Cys Ser Ser Glu Leu Lys Asn Arg
            660              665              670

Met Glu Tyr Ala Leu Asn Met Leu Leu Gln Arg Cys Asn
        675              680              685
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<210> 102
<211> 2783
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (128)..(2182)

<400> 102
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cggccggctc ggacgtgtga ccgcgcctag ggggtggcag cggcagtgc ggggcggcaa 120

ggcgacc atg gag ctt ttg cgg act atc acc tac cag cca gcc gcc agc    169
        Met Glu Leu Leu Arg Thr Ile Thr Tyr Gln Pro Ala Ala Ser
        1               5                   10

acc aaa atg tgc gag cag gcg ctg ggc aag ggt tgc gga gca gac tcg   217
Thr Lys Met Cys Glu Gln Ala Leu Gly Lys Gly Cys Gly Ala Asp Ser
 15              20                  25                  30

aag aag aag cgg ccg ccg cag ccc ccc gag gaa tcg cag cca cct cag   265
Lys Lys Lys Arg Pro Pro Gln Pro Pro Glu Glu Ser Gln Pro Pro Gln
            35                  40                  45

tcc cag gcg caa gtg ccc ccg gcg gcc cct cac cac cat cac cac cat   313
Ser Gln Ala Gln Val Pro Pro Ala Ala Pro His His His His His His
            50                  55                  60

tcg cac tcg ggg ccg gag atc tcg cgg att atc gtc gac ccc acg act   361
Ser His Ser Gly Pro Glu Ile Ser Arg Ile Ile Val Asp Pro Thr Thr
            65                  70                  75

ggg aag cgc tac tgc cgg ggc aaa gtg ctg gga aag ggt ggc ttt gca   409
```

181

```
Gly Lys Arg Tyr Cys Arg Gly Lys Val Leu Gly Lys Gly Gly Phe Ala
     80                  85                  90

aaa tgt tac gag atg aca gat ttg aca aat aac aaa gtc tac gcc gca      457
Lys Cys Tyr Glu Met Thr Asp Leu Thr Asn Asn Lys Val Tyr Ala Ala
 95                  100                 105                 110

aaa att att cct cac agc aga gta gct aaa cct cat caa agg gaa aag      505
Lys Ile Ile Pro His Ser Arg Val Ala Lys Pro His Gln Arg Glu Lys
                115                 120                 125

att gac aaa gaa ata gag ctt cac aga att ctt cat cat aag cat gta      553
Ile Asp Lys Glu Ile Glu Leu His Arg Ile Leu His His Lys His Val
            130                 135                 140

gtg cag ttt tac cac tac ttc gag gac aaa gaa aac att tac att ctc      601
Val Gln Phe Tyr His Tyr Phe Glu Asp Lys Glu Asn Ile Tyr Ile Leu
            145                 150                 155

ttg gaa tac tgc agt aga agg tca atg gct cat att ttg aaa gca aga      649
Leu Glu Tyr Cys Ser Arg Arg Ser Met Ala His Ile Leu Lys Ala Arg
        160                 165                 170

aag gtg ttg aca gag cca gaa gtt cga tac tac ctc agg cag att gtg      697
Lys Val Leu Thr Glu Pro Glu Val Arg Tyr Tyr Leu Arg Gln Ile Val
175                 180                 185                 190

tct gga ctg aaa tac ctt cat gaa caa gaa atc ttg cac aga gat ctc      745
Ser Gly Leu Lys Tyr Leu His Glu Gln Glu Ile Leu His Arg Asp Leu
                195                 200                 205

aaa cta ggg aac ttt ttt att aat gaa gcc atg gaa cta aaa gtt ggg      793
Lys Leu Gly Asn Phe Phe Ile Asn Glu Ala Met Glu Leu Lys Val Gly
            210                 215                 220

gac ttc ggt ctg gca gcc agg cta gaa ccc ttg gaa cac aga agg aga      841
Asp Phe Gly Leu Ala Ala Arg Leu Glu Pro Leu Glu His Arg Arg Arg
        225                 230                 235

acg ata tgt ggt acc cca aat tat ctc tct cct gaa gtc ctc aac aaa      889
Thr Ile Cys Gly Thr Pro Asn Tyr Leu Ser Pro Glu Val Leu Asn Lys
    240                 245                 250

caa gga cat ggc tgt gaa tca gac att tgg gcc ctg ggc tgt gta atg      937
Gln Gly His Gly Cys Glu Ser Asp Ile Trp Ala Leu Gly Cys Val Met
255                 260                 265                 270

tat aca atg tta cta ggg agg ccc cca ttt gaa act aca aat ctc aaa      985
Tyr Thr Met Leu Leu Gly Arg Pro Pro Phe Glu Thr Thr Asn Leu Lys
                275                 280                 285

gaa act tat agg tgc ata agg gaa gca agg tat aca atg ccg tcc tca     1033
Glu Thr Tyr Arg Cys Ile Arg Glu Ala Arg Tyr Thr Met Pro Ser Ser
            290                 295                 300

ttg ctg gct cct gcc aag cac tta att gct agt atg ttg tcc aaa aac     1081
Leu Leu Ala Pro Ala Lys His Leu Ile Ala Ser Met Leu Ser Lys Asn
```

```
                305                        310                        315

cca gag gat cgt ccc agt ttg gat gac atc att cga cat gac ttt ttt    1129
Pro Glu Asp Arg Pro Ser Leu Asp Asp Ile Ile Arg His Asp Phe Phe
    320                 325                 330

ttg cag ggc ttc act ccg gac aga ctg tct tct agc tgt tgt cat aca    1177
Leu Gln Gly Phe Thr Pro Asp Arg Leu Ser Ser Ser Cys Cys His Thr
335                 340                 345                 350

gtt cca gat ttc cac tta tca agc cca gct aag aat ttc ttt aag aaa    1225
Val Pro Asp Phe His Leu Ser Ser Pro Ala Lys Asn Phe Phe Lys Lys
                355                 360                 365

gca gct gct gct ctt ttt ggt ggc aaa aaa gac aaa gca aga tat att    1273
Ala Ala Ala Ala Leu Phe Gly Gly Lys Lys Asp Lys Ala Arg Tyr Ile
                370                 375                 380

gac aca cat aat aga gtg tct aaa gaa gat gaa gac atc tac aag ctt    1321
Asp Thr His Asn Arg Val Ser Lys Glu Asp Glu Asp Ile Tyr Lys Leu
            385                 390                 395

agg cat gat ttg aaa aag act tca ata act cag caa ccc agc aaa cac    1369
Arg His Asp Leu Lys Lys Thr Ser Ile Thr Gln Gln Pro Ser Lys His
    400                 405                 410

agg aca gat gag gag ctc cag cca cct acc acc aca gtt gcc agg tct    1417
Arg Thr Asp Glu Glu Leu Gln Pro Pro Thr Thr Thr Val Ala Arg Ser
415                 420                 425                 430

gga aca ccc gca gta gaa aac aag cag cag att ggg gat gct att cgg    1465
Gly Thr Pro Ala Val Glu Asn Lys Gln Gln Ile Gly Asp Ala Ile Arg
                435                 440                 445

atg ata gtc aga ggg act ctt ggc agc tgt agc agc agc agt gaa tgc    1513
Met Ile Val Arg Gly Thr Leu Gly Ser Cys Ser Ser Ser Glu Cys
                450                 455                 460

ctt gaa gac agt acc atg gga agt gtt gca gac aca gtg gca agg gtt    1561
Leu Glu Asp Ser Thr Met Gly Ser Val Ala Asp Thr Val Ala Arg Val
    465                 470                 475

ctt cgg gga tgt ctg gaa aac atg ccg gaa gct gat tgc att ccc aaa    1609
Leu Arg Gly Cys Leu Glu Asn Met Pro Glu Ala Asp Cys Ile Pro Lys
    480                 485                 490

gag cag ctg agc aca tca ttt cag tgg gtc acc aaa tgg gtt gat tac    1657
Glu Gln Leu Ser Thr Ser Phe Gln Trp Val Thr Lys Trp Val Asp Tyr
495                 500                 505                 510

tct aac aaa tat ggc ttt ggg tac cag ctc tca gac cac acc gtc ggt    1705
Ser Asn Lys Tyr Gly Phe Gly Tyr Gln Leu Ser Asp His Thr Val Gly
                515                 520                 525

gtc ctt ttc aac aat ggt gct cac atg agc ctc ctt cca gac aaa aaa    1753
Val Leu Phe Asn Asn Gly Ala His Met Ser Leu Leu Pro Asp Lys Lys
                530                 535                 540
```

183

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aca gtt cac tat tac gca gag ctt ggc caa tgc tca gtt ttc cca gca    1801
Thr Val His Tyr Tyr Ala Glu Leu Gly Gln Cys Ser Val Phe Pro Ala
        545             550             555

aca gat gct cct gag caa ttt att agt caa gtg acg gtg ctg aaa tac    1849
Thr Asp Ala Pro Glu Gln Phe Ile Ser Gln Val Thr Val Leu Lys Tyr
        560             565             570

ttt tct cat tac atg gag gag aac ctc atg gat ggt gga gat ctg cct    1897
Phe Ser His Tyr Met Glu Glu Asn Leu Met Asp Gly Gly Asp Leu Pro
575             580             585             590

agt gtt act gat att cga aga cct cgg ctc tac ctc ctt cag tgg cta    1945
Ser Val Thr Asp Ile Arg Arg Pro Arg Leu Tyr Leu Leu Gln Trp Leu
        595             600             605

aaa tct gat aag gcc cta atg atg ctc ttt aat gat ggc acc ttt cag    1993
Lys Ser Asp Lys Ala Leu Met Met Leu Phe Asn Asp Gly Thr Phe Gln
        610             615             620

gtg aat ttc tac cat gat cat aca aaa atc atc atc tgt agc caa aat    2041
Val Asn Phe Tyr His Asp His Thr Lys Ile Ile Ile Cys Ser Gln Asn
        625             630             635

gaa gaa tac ctt ctc acc tac atc aat gag gat agg ata tct aca act    2089
Glu Glu Tyr Leu Leu Thr Tyr Ile Asn Glu Asp Arg Ile Ser Thr Thr
        640             645             650

ttc agg ctg aca act ctg ctg atg tct ggc tgt tca tca gaa tta aaa    2137
Phe Arg Leu Thr Thr Leu Leu Met Ser Gly Cys Ser Ser Glu Leu Lys
655             660             665             670

aat cga atg gaa tat gcc ctg aac atg ctc tta caa aga tgt aac        2182
Asn Arg Met Glu Tyr Ala Leu Asn Met Leu Leu Gln Arg Cys Asn
        675             680             685

tgaaagactt ttcgaatgga ccctatggga ctcctctttt ccactgtgag atctacaggg  2242

aacccaaaag aatgatctag agtatgttga agaagatgga catgtggtgg tacgaaaaca  2302

attcccctgt ggcctgctgg actgggtgga accagaacag gctaaggcat acagttcttg  2362

actttggaca atccaagagt gaaccagaat gcagttttcc ttgagatacc tgttttaaaa  2422

ggttttcag  acaattttgc agaaaggtgc attgattctt aaattctctc tgttgagagc  2482

atttcagcca gaggactttg gaactgtgaa tatacttcct gaaggggagg gagaagggag  2542

gaagctccca tgttgtttaa aggctgtaat tggagcagct tttggctgcg taactgtgaa  2602

ctatggccat atataatttt ttttcattaa tttttgaaga tacttgtggc tggaaaagtg  2662

cattccttgt taataaactt tttatttatt acagcccaaa gagcagtatt tattatcaaa  2722

atgtcttttt ttttatgttg accattttaa accgttggca ataaagagta tgaaaacgca  2782
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184

<210> 103
<211> 161
<212> PRT
<213> Homo sapiens

<400> 103
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Met Ser Val Pro Gly Pro Tyr Gln Ala Ala Thr Gly Pro Ser Ser Ala
 1               5                  10                  15

Pro Ser Ala Pro Pro Ser Tyr Glu Glu Thr Val Ala Val Asn Ser Tyr
            20                  25                  30

Tyr Pro Thr Pro Pro Ala Pro Met Pro Gly Pro Thr Thr Gly Leu Val
        35                  40                  45

Thr Gly Pro Asp Gly Lys Gly Met Asn Pro Pro Ser Tyr Tyr Thr Gln
    50                  55                  60

Pro Ala Pro Ile Pro Asn Asn Asn Pro Ile Thr Val Gln Thr Val Tyr
65                  70                  75                  80

Val Gln His Pro Ile Thr Phe Leu Asp Arg Pro Ile Gln Met Cys Cys
                85                  90                  95

Pro Ser Cys Asn Lys Met Ile Val Ser Gln Leu Ser Tyr Asn Ala Gly
            100                 105                 110

Ala Leu Thr Trp Leu Ser Cys Gly Ser Leu Cys Leu Leu Gly Cys Ile
        115                 120                 125

Ala Gly Cys Cys Phe Ile Pro Phe Cys Val Asp Ala Leu Gln Asp Val
    130                 135                 140

Asp His Tyr Cys Pro Asn Cys Arg Ala Leu Leu Gly Thr Tyr Lys Arg
145                 150                 155                 160

Leu
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<210> 104
<211> 1589
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (70)..(552)

<400> 104
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ggcggtaaa atg tcg gtt cca gga cct tac cag gcg gcc act ggg cct tcc 111
          Met Ser Val Pro Gly Pro Tyr Gln Ala Ala Thr Gly Pro Ser
```

185

```
            1                 5                    10
tca gca cca tcc gca cct cca tcc tat gaa gag aca gtg gct gtt aac    159
Ser Ala Pro Ser Ala Pro Pro Ser Tyr Glu Glu Thr Val Ala Val Asn
 15              20                  25                  30

agt tat tac ccc aca cct cca gct ccc atg cct ggg cca act acg ggg    207
Ser Tyr Tyr Pro Thr Pro Pro Ala Pro Met Pro Gly Pro Thr Thr Gly
                35                  40                  45

ctt gtg acg ggg cct gat ggg aag ggc atg aat cct cct tcg tat tat    255
Leu Val Thr Gly Pro Asp Gly Lys Gly Met Asn Pro Pro Ser Tyr Tyr
                50                  55                  60

acc cag cca gcg ccc atc ccc aat aac aat cca att acc gtg cag acg    303
Thr Gln Pro Ala Pro Ile Pro Asn Asn Asn Pro Ile Thr Val Gln Thr
            65                  70                  75

gtc tac gtg cag cac ccc atc acc ttt ttg gac cgc cct atc caa atg    351
Val Tyr Val Gln His Pro Ile Thr Phe Leu Asp Arg Pro Ile Gln Met
        80                  85                  90

tgt tgt cct tcc tgc aac aag atg atc gtg agt cag ctg tcc tat aac    399
Cys Cys Pro Ser Cys Asn Lys Met Ile Val Ser Gln Leu Ser Tyr Asn
 95              100                 105                 110

gcc ggt gct ctg acc tgg ctg tcc tgc ggg agc ctg tgc ctg ctg ggg    447
Ala Gly Ala Leu Thr Trp Leu Ser Cys Gly Ser Leu Cys Leu Leu Gly
                115                 120                 125

tgc ata gcg ggc tgc tgc ttc atc ccc ttc tgc gtg gat gcc ctg cag    495
Cys Ile Ala Gly Cys Cys Phe Ile Pro Phe Cys Val Asp Ala Leu Gln
                130                 135                 140

gac gtg gac cat tac tgt ccc aac tgc aga gct ctc ctg ggc acc tac    543
Asp Val Asp His Tyr Cys Pro Asn Cys Arg Ala Leu Leu Gly Thr Tyr
            145                 150                 155

aag cgt ttg taggactcag ccagacgtgg agggagccgg gtgccgcagg            592
Lys Arg Leu
        160

aagtcctttc cacctctcat ccagcttcac gcctggtgga ggttctgccc tggtggtctc  652

acctctccag ggggcccacc ttcatgtctt cttttggggg gaatacgtcg caaaactaac  712

aaatctccaa accccagaaa ttgctgcttg gagtcgtgca taggacttgc aaagacattc  772

cccttgagtg tcagttccac ggtttcctgc ctccctgaga ccctgagtcc tgccatctaa  832

ctgtgatcat tgccctatcc gaatatcttc ctgtgatctg ccatcagtgg ctcttttttc  892

ctgcttccat gggcctttct ggtggcagtc tcaaactgag aagccacagt tgccttattt  952

ttgaggctgt ctgcccaga gctcggctga accagccttt agtgcctacc attatcttat  1012

ccgtctcttc ccgtccctga tgacaaagat cttgccttac agactttaca ggcttggctt  1072
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186

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tgagattctg taactgcaga cttcattagc acacagattc actttaattt cttaattttt 1132

tttttaaata caaggagggg gctattaaca cccagtacag acatatccac aaggtcgtaa 1192

atgcatgcta gaaaaatagg gctggatctt atcactgccc tgtctcccct tgtttctctg 1252

tgccagatct tcagtgcccc tttccataca gggatttttt tctcatagag taattatatg 1312

aacagttttt atgacctcct tttggtctga aatactttcg aacagaattt cttttttta 1372

aaaaaaaaca gagatggggt cttactatgt tgcccaggct ggtgtcgaac tcctgggctc 1432

aagcgatcct tctgccttgg cctcccgaag tgctgggatt gcaggcataa gctaccatgc 1492

tgggcctgaa cataatttca agaggaggat ttataaaacc attttctgta atcaaatgat 1552

tggtgtcatt ttcccatttg ccaatgtagt ctcactt                          1589
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<210> 105
<211> 161
<212> PRT
<213> Homo sapiens

<400> 105

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Met Ser Val Pro Gly Pro Tyr Gln Ala Ala Thr Gly Pro Ser Ser Ala
  1               5                  10                  15

Pro Ser Ala Pro Pro Ser Tyr Glu Glu Thr Val Ala Val Asn Ser Tyr
            20                  25                  30

Tyr Pro Thr Pro Pro Ala Pro Met Pro Gly Pro Thr Thr Gly Leu Val
            35                  40                  45

Thr Gly Pro Asp Gly Lys Gly Met Asn Pro Pro Ser Tyr Tyr Thr Gln
        50                  55                  60

Pro Ala Pro Ile Pro Asn Asn Asn Pro Ile Thr Val Gln Thr Val Tyr
 65                  70                  75                  80

Val Gln His Pro Ile Thr Phe Leu Asp Arg Pro Val Gln Met Cys Cys
                85                  90                  95

Pro Ser Cys Asn Lys Met Ile Val Ser Gln Leu Ser Tyr Asn Ala Gly
            100                 105                 110

Ala Leu Thr Trp Leu Ser Cys Gly Ser Leu Cys Leu Leu Gly Cys Ile
            115                 120                 125

Ala Gly Cys Cys Phe Ile Pro Phe Cys Val Asp Ala Leu Gln Asp Val
            130                 135                 140

Asp His Tyr Cys Pro Asn Cys Arg Ala Leu Leu Gly Thr Tyr Lys Arg
145                 150                 155                 160

Leu
```

187

```
<210> 106
<211> 1589
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (70)..(552)

<400> 106
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ggcggtaaa atg tcg gtt cca gga cct tac cag gcg gcc act ggg cct tcc  111
          Met Ser Val Pro Gly Pro Tyr Gln Ala Ala Thr Gly Pro Ser
            1               5                  10

tca gca cca tcc gca cct cca tcc tat gaa gag aca gtg gct gtt aac   159
Ser Ala Pro Ser Ala Pro Pro Ser Tyr Glu Glu Thr Val Ala Val Asn
 15               20                  25                  30

agt tat tac ccc aca cct cca gct ccc atg cct ggg cca act acg ggg   207
Ser Tyr Tyr Pro Thr Pro Pro Ala Pro Met Pro Gly Pro Thr Thr Gly
                 35                  40                  45

ctt gtg acg ggg cct gat ggg aag ggc atg aat cct cct tcg tat tat   255
Leu Val Thr Gly Pro Asp Gly Lys Gly Met Asn Pro Pro Ser Tyr Tyr
                 50                  55                  60

acc cag cca gcg ccc atc ccc aat aac aat cca att acc gtg cag acg   303
Thr Gln Pro Ala Pro Ile Pro Asn Asn Asn Pro Ile Thr Val Gln Thr
             65                  70                  75

gtc tac gtg cag cac ccc atc acc ttt ttg gac cgc cct gtc caa atg   351
Val Tyr Val Gln His Pro Ile Thr Phe Leu Asp Arg Pro Val Gln Met
     80                  85                  90

tgt tgt cct tcc tgc aac aag atg atc gtg agt cag ctg tcc tat aac   399
Cys Cys Pro Ser Cys Asn Lys Met Ile Val Ser Gln Leu Ser Tyr Asn
 95                  100                 105                 110

gcc ggt gct ctg acc tgg ctg tcc tgc ggg agc ctg tgc ctg ctg ggg   447
Ala Gly Ala Leu Thr Trp Leu Ser Cys Gly Ser Leu Cys Leu Leu Gly
                 115                 120                 125

tgc ata gcg ggc tgc tgc ttc atc ccc ttc tgc gtg gat gcc ctg cag   495
Cys Ile Ala Gly Cys Cys Phe Ile Pro Phe Cys Val Asp Ala Leu Gln
                 130                 135                 140

gac gtg gac cat tac tgt ccc aac tgc aga gct ctc ctg ggc acc tac   543
Asp Val Asp His Tyr Cys Pro Asn Cys Arg Ala Leu Leu Gly Thr Tyr
             145                 150                 155

aag cgt ttg taggactcag ccagacgtgg agggagccgg gtgccgcagg           592
Lys Arg Leu
```

160

aagtcctttc cacctctcat ccagcttcac gcctggtgga ggttctgccc tggtggtctc 652

acctctccag ggggcccacc ttcatgtctt cttttggggg gaatacgtcg caaaactaac 712

aaatctccaa accccagaaa ttgctgcttg gagtcgtgca taggacttgc aaagacattc 772

cccttgagtg tcagttccac ggtttcctgc ctccctgaga ccctgagtcc tgccatctaa 832

ctgtgatcat tgccctatcc gaatatcttc ctgtgatctg ccatcagtgg ctctttttc 892

ctgcttccat gggcctttct ggtggcagtc tcaaactgag aagccacagt tgccttattt 952

ttgaggctgt tctgcccaga gctcggctga accagccttt agtgcctacc attatcttat 1012

ccgtctcttc ccgtccctga tgacaaagat cttgccttac agactttaca ggcttggctt 1072

tgagattctg taactgcaga cttcattagc acacagattc actttaattt cttaattttt 1132

tttttaaata caaggagggg gctattaaca cccagtacag acatatccac aaggtcgtaa 1192

atgcatgcta gaaaaatagg gctggatctt atcactgccc tgtctcccct tgtttctctg 1252

tgccagatct tcagtgcccc tttccataca gggattttt tctcatagag taattatatg 1312

aacagttttt atgacctcct tttggtctga aatactttcg aacagaattt cttttttta 1372

aaaaaaaaca gagatggggt cttactatgt tgcccaggct ggtgtcgaac tcctgggctc 1432

aagcgatcct tctgccttgg cctcccgaag tgctgggatt gcaggcataa gctaccatgc 1492

tgggcctgaa cataatttca agaggaggat ttataaaacc attttctgta atcaaatgat 1552

tggtgtcatt ttcccatttg ccaatgtagt ctcactt 1589

<210> 107
<211> 249
<212> PRT
<213> Homo sapiens

<400> 107
Met Ala Ser Ala Ser Gly Ala Met Ala Lys His Glu Gln Ile Leu Val
1   5   10   15

Leu Asp Pro Pro Thr Asp Leu Lys Phe Lys Gly Pro Phe Thr Asp Val
            20   25   30

Val Thr Thr Asn Leu Lys Leu Arg Asn Pro Ser Asp Arg Lys Val Cys
        35   40   45

Phe Lys Val Lys Thr Thr Ala Pro Arg Arg Tyr Cys Val Arg Pro Asn
    50   55   60

Ser Gly Ile Ile Asp Pro Gly Ser Thr Val Thr Val Ser Val Met Leu
65   70   75   80

189

```
Gln Pro Phe Asp Tyr Asp Pro Asn Glu Lys Ser Lys His Lys Phe Met
                85              90              95

Val Gln Thr Ile Phe Ala Pro Pro Asn Thr Ser Asp Met Glu Ala Val
                100             105             110

Trp Lys Glu Ala Lys Pro Asp Glu Leu Met Asp Ser Lys Leu Arg Cys
                115             120             125

Val Phe Glu Met Pro Asn Glu Asn Asp Lys Leu Asn Asp Met Glu Pro
        130             135             140

Ser Lys Ala Val Pro Leu Asn Ala Ser Lys Gln Asp Gly Pro Met Pro
145             150             155             160

Lys Pro His Ser Val Ser Leu Asn Asp Thr Glu Thr Arg Lys Leu Met
                165             170             175

Glu Glu Cys Lys Arg Leu Gln Gly Glu Met Met Lys Leu Ser Glu Glu
            180             185             190

Asn Arg His Leu Arg Asp Glu Gly Leu Arg Leu Arg Lys Val Ala His
            195             200             205

Ser Asp Lys Pro Gly Ser Thr Ser Thr Ala Ser Phe Arg Asp Asn Val
    210             215             220

Thr Ser Pro Leu Pro Ser Leu Leu Val Val Ile Ala Ala Ile Phe Ile
225             230             235             240

Gly Phe Phe Leu Gly Lys Phe Ile Leu
                245
```

<210> 108
<211> 1595
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (232)..(978)

<400> 108

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agtgcgcgtg gccgtggcgg ctggtgtggg gttgagtcag ttgtgggacc cggagctgct 60

gacccagcgg gtggcccacc gaaccggtga cacagcggca ggcgttaggg ctcgggagcc 120

gcgagcctgg cctcgtccta gagctcggcc gagccgtcgc cgccgtcgtc ccccgccccc 180

agtcagcaaa ccgccgccgc gggcgcgccc ccgctctgcg ctgtctctcc g atg gcg 237
                                                        Met Ala
                                                        1

tcc gcc tca ggg gcc atg gcg aag cac gag cag atc ctg gtc ctc gat 285
Ser Ala Ser Gly Ala Met Ala Lys His Glu Gln Ile Leu Val Leu Asp
```

190

```
                5                        10                        15

ccg ccc aca gac ctc aaa ttc aaa ggc ccc ttc aca gat gta gtc act      333
Pro Pro Thr Asp Leu Lys Phe Lys Gly Pro Phe Thr Asp Val Val Thr
        20                      25                      30

aca aat ctt aaa ttg cga aat cca tcg gat aga aaa gtg tgt ttc aaa      381
Thr Asn Leu Lys Leu Arg Asn Pro Ser Asp Arg Lys Val Cys Phe Lys
 35                      40                      45                  50

gtg aag act aca gca cct cgc cgg tac tgt gtg agg ccc aac agt gga      429
Val Lys Thr Thr Ala Pro Arg Arg Tyr Cys Val Arg Pro Asn Ser Gly
                    55                      60                      65

att att gac cca ggg tca act gtg act gtt tca gta atg cta cag ccc      477
Ile Ile Asp Pro Gly Ser Thr Val Thr Val Ser Val Met Leu Gln Pro
                70                      75                      80

ttt gac tat gat ccg aat gaa aag agt aaa cac aag ttt atg gta cag      525
Phe Asp Tyr Asp Pro Asn Glu Lys Ser Lys His Lys Phe Met Val Gln
            85                      90                      95

aca att ttt gct cca cca aac act tca gat atg gaa gct gtg tgg aaa      573
Thr Ile Phe Ala Pro Pro Asn Thr Ser Asp Met Glu Ala Val Trp Lys
    100                     105                     110

gag gca aaa cct gat gaa tta atg gat tcc aaa ttg aga tgc gta ttt      621
Glu Ala Lys Pro Asp Glu Leu Met Asp Ser Lys Leu Arg Cys Val Phe
115                     120                     125                     130

gaa atg ccc aat gaa aat gat aaa ttg aat gat atg gaa cct agc aaa      669
Glu Met Pro Asn Glu Asn Asp Lys Leu Asn Asp Met Glu Pro Ser Lys
                    135                     140                     145

gct gtt cca ctg aat gca tct aag caa gat gga cct atg cca aaa cca      717
Ala Val Pro Leu Asn Ala Ser Lys Gln Asp Gly Pro Met Pro Lys Pro
                150                     155                     160

cac agt gtt tca ctt aat gat acc gaa aca agg aaa cta atg gaa gag      765
His Ser Val Ser Leu Asn Asp Thr Glu Thr Arg Lys Leu Met Glu Glu
            165                     170                     175

tgt aaa aga ctt cag gga gaa atg atg aag cta tca gaa gaa aat cgg      813
Cys Lys Arg Leu Gln Gly Glu Met Met Lys Leu Ser Glu Glu Asn Arg
    180                     185                     190

cac ctg aga gat gaa ggt tta agg ctc aga aag gta gca cat tcg gat      861
His Leu Arg Asp Glu Gly Leu Arg Leu Arg Lys Val Ala His Ser Asp
195                     200                     205                     210

aaa cct gga tca acc tca act gca tcc ttc aga gat aat gtc acc agt      909
Lys Pro Gly Ser Thr Ser Thr Ala Ser Phe Arg Asp Asn Val Thr Ser
                    215                     220                     225

cct ctt cct tca ctt ctt gtt gta att gca gcc att ttc att gga ttc      957
Pro Leu Pro Ser Leu Leu Val Val Ile Ala Ala Ile Phe Ile Gly Phe
                230                     235                     240
```

191

```
ttt cta ggg aaa ttc atc ttg tagagtgaag catgcagagt gctgtttctt      1008
Phe Leu Gly Lys Phe Ile Leu
        245

tttttttttt tctcttgacc agaaaaagat ttgtttacct accatttcat tggtagtatg 1068

gcccacggtg accatttttt tgtgtgtaca gcgtcatata ggctttgcct ttaatgatct 1128

cttacggtta gaaaacacaa taaaaacaaa ctgttcggct actggacagg ttgtatatta 1188

ccagatcatc actagcagat gtcagttgca cattgagtcc tttatgaaat tcataaataa 1248

agaattgttc tttctttgtg gttttaataa gagttcaaga attgttcaga gtcttgtaaa 1308

tgttatttta ataatccctt taaattttat ctgttgctgt tacctcttga aatatgattt 1368

atttagattg ctaatcccac tcattcagga aatgccaaga ggtattcctt ggggaaatgg 1428

tgcctcttac agtgtaaatt tttcctcctt tacctttgct aatatcatgg cagaattttt 1488

cttatccctt gtgaggcagt tgttgactga gtttttcatc cttacaatcc tgtcccatgg 1548

tatttaacat aaaaaaaaat aaaactgtta acagattctt gctcgat           1595
```

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<210> 109
<211> 540
<212> PRT
<213> Homo sapiens

<400> 109
Met Gly Thr Thr Ala Arg Ala Ala Leu Val Leu Thr Tyr Leu Ala Val
  1               5                  10                  15

Ala Ser Ala Ala Ser Glu Gly Gly Phe Thr Ala Thr Gly Gln Arg Gln
            20                  25                  30

Leu Arg Pro Glu His Phe Gln Glu Val Gly Tyr Ala Ala Pro Pro Ser
        35                  40                  45

Pro Pro Leu Ser Arg Ser Leu Pro Met Asp His Pro Asp Ser Ser Gln
    50                  55                  60

His Gly Pro Pro Phe Glu Gly Gln Ser Gln Val Gln Pro Pro Pro Ser
 65                  70                  75                  80

Gln Glu Ala Thr Pro Leu Gln Gln Glu Lys Leu Leu Pro Ala Gln Leu
                85                  90                  95

Pro Ala Glu Lys Glu Val Gly Pro Pro Leu Pro Gln Glu Ala Val Pro
            100                 105                 110

Leu Gln Lys Glu Leu Pro Ser Leu Gln His Pro Asn Glu Gln Lys Glu
        115                 120                 125

Gly Thr Pro Ala Pro Phe Gly Asp Gln Ser His Pro Glu Pro Glu Ser
```

192

```
                 130                      135                        140

Trp Asn Ala Ala Gln His Cys Gln Gln Asp Arg Ser Gln Gly Gly Trp
145                 150                 155                     160

Gly His Arg Leu Asp Gly Phe Pro Pro Gly Arg Pro Ser Pro Asp Asn
                165             170                 175

Leu Asn Gln Ile Cys Leu Pro Asn Arg Gln His Val Val Tyr Gly Pro
                180             185                 190

Trp Asn Leu Pro Gln Ser Ser Tyr Ser His Leu Thr Arg Gln Gly Glu
            195             200                 205

Thr Leu Asn Phe Leu Glu Ile Gly Tyr Ser Arg Cys Cys His Cys Arg
    210             215                 220

Ser His Thr Asn Arg Leu Glu Cys Ala Lys Leu Val Trp Glu Glu Ala
225             230                 235                     240

Met Ser Arg Phe Cys Glu Ala Glu Phe Ser Val Lys Thr Arg Pro His
                245             250                 255

Trp Cys Cys Thr Arg Gln Gly Glu Ala Arg Phe Ser Cys Phe Gln Glu
            260             265                 270

Glu Ala Pro Gln Pro His Tyr Gln Leu Arg Ala Cys Pro Ser His Gln
        275             280                 285

Pro Asp Ile Ser Ser Gly Leu Glu Leu Pro Phe Pro Pro Gly Val Pro
    290             295                 300

Thr Leu Asp Asn Ile Lys Asn Ile Cys His Leu Arg Arg Phe Arg Ser
305             310                 315                     320

Val Pro Arg Asn Leu Pro Ala Thr Asp Pro Leu Gln Arg Glu Leu Leu
                325             330                 335

Ala Leu Ile Gln Leu Glu Arg Glu Phe Gln Arg Cys Cys Arg Gln Gly
            340             345                 350

Asn Asn His Thr Cys Thr Trp Lys Ala Trp Glu Asp Thr Leu Asp Lys
            355             360                 365

Tyr Cys Asp Arg Glu Tyr Ala Val Lys Thr His His His Leu Cys Cys
    370             375                 380

Arg His Pro Pro Ser Pro Thr Arg Asp Glu Cys Phe Ala Arg Arg Ala
385             390                 395                     400

Pro Tyr Pro Asn Tyr Asp Arg Asp Ile Leu Thr Ile Asp Ile Gly Arg
                405             410                 415

Val Thr Pro Asn Leu Met Gly His Leu Cys Gly Asn Gln Arg Val Leu
                420             425                 430

Thr Lys His Lys His Ile Pro Gly Leu Ile His Asn Met Thr Ala Arg
```

193

```
            435                     440                     445

Cys Cys Asp Leu Pro Phe Pro Glu Gln Ala Cys Cys Ala Glu Glu Glu
    450                 455                 460

Lys Leu Thr Phe Ile Asn Asp Leu Cys Gly Pro Arg Arg Asn Ile Trp
465                 470                 475                 480

Arg Asp Pro Ala Leu Cys Cys Tyr Leu Ser Pro Gly Asp Glu Gln Val
                485                 490                 495

Asn Cys Phe Asn Ile Asn Tyr Leu Arg Asn Val Ala Leu Val Ser Gly
            500                 505                 510

Asp Thr Glu Asn Ala Lys Gly Gln Gly Glu Gln Gly Ser Thr Gly Gly
        515                 520                 525

Thr Asn Ile Ser Ser Thr Ser Glu Pro Lys Glu Glu
    530                 535                 540
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<210> 110
<211> 1810
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (102)..(1721)

<400> 110

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aaccgtaaca gccaccagac aagcttcagt ggccggccct tcacatccag acttgcctga 60

gaggacccac ctctgagtgt ccagtggtca gttgccccag g atg ggg acc aca gcc 116
                                               Met Gly Thr Thr Ala
                                               1               5

aga gca gcc ttg gtc ttg acc tat ttg gct gtt gct tct gct gcc tct    164
Arg Ala Ala Leu Val Leu Thr Tyr Leu Ala Val Ala Ser Ala Ala Ser
            10                  15                  20

gag gga ggc ttc acg gct aca gga cag agg cag ctg agg cca gag cac    212
Glu Gly Gly Phe Thr Ala Thr Gly Gln Arg Gln Leu Arg Pro Glu His
            25                  30                  35

ttt caa gaa gtt ggc tac gca gct ccc ccc tcc cca ccc cta tcc cga    260
Phe Gln Glu Val Gly Tyr Ala Ala Pro Pro Ser Pro Pro Leu Ser Arg
            40                  45                  50

agc ctc ccc atg gat cac cct gac tcc tct cag cat ggc cct ccc ttt    308
Ser Leu Pro Met Asp His Pro Asp Ser Ser Gln His Gly Pro Pro Phe
        55                  60                  65

gag gga cag agt caa gtg cag ccc cct ccc tct cag gag gcc acc cct    356
Glu Gly Gln Ser Gln Val Gln Pro Pro Pro Ser Gln Glu Ala Thr Pro
    70                  75                  80                  85
```

```
ctc caa cag gaa aag ctg cta cct gcc caa ctc cct gct gaa aag gaa    404
Leu Gln Gln Glu Lys Leu Leu Pro Ala Gln Leu Pro Ala Glu Lys Glu
            90                  95                  100

gtg ggt ccc cct ctc cct cag gaa gct gtc ccc ctc caa aaa gag ctg    452
Val Gly Pro Pro Leu Pro Gln Glu Ala Val Pro Leu Gln Lys Glu Leu
            105                 110                 115

ccc tct ctc cag cac ccc aat gaa cag aag gaa gga acg cca gct cca    500
Pro Ser Leu Gln His Pro Asn Glu Gln Lys Glu Gly Thr Pro Ala Pro
            120                 125                 130

ttt ggg gac cag agc cat cca gaa cct gag tcc tgg aat gca gcc cag    548
Phe Gly Asp Gln Ser His Pro Glu Pro Glu Ser Trp Asn Ala Ala Gln
    135                 140                 145

cac tgc caa cag gac cgg tcc caa ggg ggc tgg ggc cac cgg ctg gat    596
His Cys Gln Gln Asp Arg Ser Gln Gly Gly Trp Gly His Arg Leu Asp
150                 155                 160                 165

ggc ttc ccc cct ggg cgg cct tct cca gac aat ctg aac caa atc tgc    644
Gly Phe Pro Pro Gly Arg Pro Ser Pro Asp Asn Leu Asn Gln Ile Cys
            170                 175                 180

ctt cct aac cgt cag cat gtg gta tat ggt ccc tgg aac cta cca cag    692
Leu Pro Asn Arg Gln His Val Val Tyr Gly Pro Trp Asn Leu Pro Gln
            185                 190                 195

tcc agc tac tcc cac ctc act cgc cag ggt gag acc ctc aat ttc ctg    740
Ser Ser Tyr Ser His Leu Thr Arg Gln Gly Glu Thr Leu Asn Phe Leu
            200                 205                 210

gag att gga tat tcc cgc tgc tgc cac tgc cgc agc cac aca aac cgc    788
Glu Ile Gly Tyr Ser Arg Cys Cys His Cys Arg Ser His Thr Asn Arg
    215                 220                 225

cta gag tgt gcc aaa ctt gtg tgg gag gaa gca atg agc cga ttc tgt    836
Leu Glu Cys Ala Lys Leu Val Trp Glu Glu Ala Met Ser Arg Phe Cys
230                 235                 240                 245

gag gcc gag ttc tcg gtc aag acc cga ccc cac tgg tgc tgc acg cgg    884
Glu Ala Glu Phe Ser Val Lys Thr Arg Pro His Trp Cys Cys Thr Arg
            250                 255                 260

cag ggg gag gct cgg ttc tcc tgc ttc cag gag gaa gct ccc cag cca    932
Gln Gly Glu Ala Arg Phe Ser Cys Phe Gln Glu Glu Ala Pro Gln Pro
            265                 270                 275

cac tac cag ctc cgg gcc tgc ccc agc cat cag cct gat att tcc tcg    980
His Tyr Gln Leu Arg Ala Cys Pro Ser His Gln Pro Asp Ile Ser Ser
            280                 285                 290

ggt ctt gag ctg cct ttc cct cct ggg gtg ccc aca ttg gac aat atc   1028
Gly Leu Glu Leu Pro Phe Pro Pro Gly Val Pro Thr Leu Asp Asn Ile
    295                 300                 305

aag aac atc tgc cac ctg agg cgc ttc cgc tct gtg cca cgc aac ctg   1076
```

195

```
Lys Asn Ile Cys His Leu Arg Arg Phe Arg Ser Val Pro Arg Asn Leu
310             315             320             325

cca gct act gac ccc cta caa agg gag ctg ctg gca ctg atc cag ctg   1124
Pro Ala Thr Asp Pro Leu Gln Arg Glu Leu Leu Ala Leu Ile Gln Leu
            330             335             340

gag agg gag ttc cag cgc tgc tgc cgc cag ggg aac aat cac acc tgt   1172
Glu Arg Glu Phe Gln Arg Cys Cys Arg Gln Gly Asn Asn His Thr Cys
            345             350             355

aca tgg aag gcc tgg gag gat acc ctt gac aaa tac tgt gac cgg gag   1220
Thr Trp Lys Ala Trp Glu Asp Thr Leu Asp Lys Tyr Cys Asp Arg Glu
            360             365             370

tat gct gtg aag acc cac cac cac ttg tgt tgc cgc cac cct ccc agc   1268
Tyr Ala Val Lys Thr His His His Leu Cys Cys Arg His Pro Pro Ser
            375             380             385

cct act cgg gat gag tgc ttt gcc cgt cgg gct cct tac ccc aac tat   1316
Pro Thr Arg Asp Glu Cys Phe Ala Arg Arg Ala Pro Tyr Pro Asn Tyr
390             395             400             405

gac cgg gac atc ttg acc att gac atc ggt cga gtc acc ccc aac ctc   1364
Asp Arg Asp Ile Leu Thr Ile Asp Ile Gly Arg Val Thr Pro Asn Leu
            410             415             420

atg ggc cac ctc tgt gga aac caa aga gtt ctc acc aag cat aaa cat   1412
Met Gly His Leu Cys Gly Asn Gln Arg Val Leu Thr Lys His Lys His
            425             430             435

att cct ggg ctg atc cac aac atg act gcc cgc tgc tgt gac ctg cca   1460
Ile Pro Gly Leu Ile His Asn Met Thr Ala Arg Cys Cys Asp Leu Pro
            440             445             450

ttt cca gaa cag gcc tgc tgt gca gag gag gag aaa tta acc ttc atc   1508
Phe Pro Glu Gln Ala Cys Cys Ala Glu Glu Glu Lys Leu Thr Phe Ile
            455             460             465

aat gat ctg tgt ggt ccc cga cgt aac atc tgg cga gac cct gcc ctc   1556
Asn Asp Leu Cys Gly Pro Arg Arg Asn Ile Trp Arg Asp Pro Ala Leu
470             475             480             485

tgc tgt tac ctg agt cct ggg gat gaa cag gtc aac tgc ttc aac atc   1604
Cys Cys Tyr Leu Ser Pro Gly Asp Glu Gln Val Asn Cys Phe Asn Ile
            490             495             500

aat tat ctg agg aac gtg gct cta gtg tct gga gac act gag aac gcc   1652
Asn Tyr Leu Arg Asn Val Ala Leu Val Ser Gly Asp Thr Glu Asn Ala
            505             510             515

aag ggc cag ggg gag cag ggc tca act gga gga aca aat atc agc tcc   1700
Lys Gly Gln Gly Glu Gln Gly Ser Thr Gly Gly Thr Asn Ile Ser Ser
            520             525             530

acc tct gag ccc aag gaa gaa tgagtcaccc cagagcccta gagggtcaga      1751
Thr Ser Glu Pro Lys Glu Glu
```

196

535   540

tggggggaac cccaccctgc cccacccatc tgaacactca ttacactaaa cacctcttg   1810

<210> 111
<211> 540
<212> PRT
<213> Homo sapiens

<400> 111
Met Gly Thr Thr Ala Arg Ala Ala Leu Val Leu Thr Tyr Leu Ala Val
 1   5   10   15

Ala Ser Ala Ala Ser Glu Gly Gly Phe Thr Ala Thr Gly Gln Arg Gln
            20   25   30

Leu Arg Pro Glu His Phe Gln Glu Val Gly Tyr Ala Ala Pro Pro Ser
        35   40   45

Pro Pro Leu Ser Arg Ser Leu Pro Met Asp His Pro Asp Ser Ser Gln
    50   55   60

His Gly Pro Pro Phe Glu Gly Gln Ser Gln Val Gln Pro Pro Pro Ser
65   70   75   80

Gln Glu Ala Thr Pro Leu Gln Gln Glu Lys Leu Leu Pro Ala Gln Leu
                85   90   95

Pro Ala Glu Lys Glu Val Gly Pro Pro Leu Pro Gln Glu Ala Val Pro
            100   105   110

Leu Gln Lys Glu Leu Pro Ser Leu Gln His Pro Asn Glu Gln Lys Glu
            115   120   125

Gly Thr Pro Ala Pro Phe Gly Asp Gln Ser His Pro Glu Pro Glu Ser
    130   135   140

Trp Asn Ala Ala Gln His Cys Gln Gln Asp Arg Ser Gln Gly Gly Trp
145   150   155   160

Gly His Arg Leu Asp Gly Phe Pro Pro Gly Arg Pro Ser Pro Asp Asn
                165   170   175

Leu Asn Gln Ile Cys Leu Pro Asn Arg Gln His Val Val Tyr Gly Pro
            180   185   190

Trp Asn Leu Pro Gln Ser Ser Tyr Ser His Leu Thr Arg Gln Gly Glu
            195   200   205

Thr Leu Asn Phe Leu Glu Ile Gly Tyr Ser Arg Cys Cys His Cys Arg
    210   215   220

Ser His Thr Asn Arg Leu Glu Cys Ala Lys Leu Val Trp Glu Glu Ala
225   230   235   240

Met Ser Arg Phe Cys Glu Ala Glu Phe Ser Val Lys Thr Arg Pro His

197

```
                    245                      250                      255

Trp Cys Cys Thr Arg Gln Gly Glu Ala Arg Phe Ser Cys Phe Gln Glu
        260                  265                  270

Glu Ala Pro Gln Pro His Tyr Gln Leu Arg Ala Cys Pro Ser His Gln
        275                  280                  285

Pro Asp Ile Ser Ser Gly Leu Glu Leu Pro Phe Pro Pro Gly Val Pro
        290                  295                  300

Thr Leu Asp Asn Ile Lys Asn Ile Cys His Leu Arg Arg Phe Arg Ser
305                  310                  315                  320

Val Pro Arg Asn Leu Pro Ala Thr Asp Pro Leu Gln Arg Glu Leu Leu
                325                  330                  335

Ala Leu Ile Gln Leu Glu Arg Glu Phe Gln Arg Cys Cys Arg Gln Gly
                340                  345                  350

Asn Asn His Thr Cys Thr Trp Lys Ala Trp Glu Asp Thr Leu Asp Lys
                355                  360                  365

Tyr Cys Asp Arg Glu Tyr Ala Val Lys Thr His His His Leu Cys Cys
        370                  375                  380

Arg His Pro Pro Ser Pro Thr Arg Asp Glu Cys Phe Ala Arg Arg Ala
385                  390                  395                  400

Pro Tyr Pro Asn Tyr Asp Arg Asp Ile Leu Thr Ile Asp Ile Ser Arg
                405                  410                  415

Val Thr Pro Asn Leu Met Gly His Leu Cys Gly Asn Gln Arg Val Leu
                420                  425                  430

Thr Lys His Lys His Ile Pro Gly Leu Ile His Asn Met Thr Ala Arg
        435                  440                  445

Cys Cys Asp Leu Pro Phe Pro Glu Gln Ala Cys Cys Ala Glu Glu Glu
        450                  455                  460

Lys Leu Thr Phe Ile Asn Asp Leu Cys Gly Pro Arg Arg Asn Ile Trp
465                  470                  475                  480

Arg Asp Pro Ala Leu Cys Cys Tyr Leu Ser Pro Gly Asp Glu Gln Val
                485                  490                  495

Asn Cys Phe Asn Ile Asn Tyr Leu Arg Asn Val Ala Leu Val Ser Gly
        500                  505                  510

Asp Thr Glu Asn Ala Lys Gly Gln Gly Glu Gln Gly Ser Thr Gly Gly
        515                  520                  525

Thr Asn Ile Ser Ser Thr Ser Glu Pro Lys Glu Glu
        530                  535                  540
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<210> 112
<211> 1810
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (102)..(1721)

<400> 112
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gaggacccac ctctgagtgt ccagtggtca gttgccccag g atg ggg acc aca gcc 116
                                         Met Gly Thr Thr Ala
                                         1   5

aga gca gcc ttg gtc ttg acc tat ttg gct gtt gct tct gct gcc tct 164
Arg Ala Ala Leu Val Leu Thr Tyr Leu Ala Val Ala Ser Ala Ala Ser
                 10   15   20

gag gga ggc ttc acg gct aca gga cag agg cag ctg agg cca gag cac 212
Glu Gly Gly Phe Thr Ala Thr Gly Gln Arg Gln Leu Arg Pro Glu His
               25   30   35

ttt caa gaa gtt ggc tac gca gct ccc ccc tcc cca ccc cta tcc cga 260
Phe Gln Glu Val Gly Tyr Ala Ala Pro Pro Ser Pro Pro Leu Ser Arg
          40   45   50

agc ctc ccc atg gat cac cct gac tcc tct cag cat ggc cct ccc ttt 308
Ser Leu Pro Met Asp His Pro Asp Ser Ser Gln His Gly Pro Pro Phe
       55   60   65

gag gga cag agt caa gtg cag ccc cct ccc tct cag gag gcc acc cct 356
Glu Gly Gln Ser Gln Val Gln Pro Pro Pro Ser Gln Glu Ala Thr Pro
 70   75   80   85

ctc caa cag gaa aag ctg cta cct gcc caa ctc cct gct gaa aag gaa 404
Leu Gln Gln Glu Lys Leu Leu Pro Ala Gln Leu Pro Ala Glu Lys Glu
               90   95   100

gtg ggt ccc cct ctc cct cag gaa gct gtc ccc ctc caa aaa gag ctg 452
Val Gly Pro Pro Leu Pro Gln Glu Ala Val Pro Leu Gln Lys Glu Leu
              105   110   115

ccc tct ctc cag cac ccc aat gaa cag aag gaa gga acg cca gct cca 500
Pro Ser Leu Gln His Pro Asn Glu Gln Lys Glu Gly Thr Pro Ala Pro
            120   125   130

ttt ggg gac cag agc cat cca gaa cct gag tcc tgg aat gca gcc cag 548
Phe Gly Asp Gln Ser His Pro Glu Pro Glu Ser Trp Asn Ala Ala Gln
 135   140   145

cac tgc caa cag gac cgg tcc caa ggg ggc tgg ggc cac cgg ctg gat 596
His Cys Gln Gln Asp Arg Ser Gln Gly Gly Trp Gly His Arg Leu Asp
150   155   160   165

ggc ttc ccc cct ggg cgg cct tct cca gac aat ctg aac caa atc tgc 644

199

```
Gly Phe Pro Pro Gly Arg Pro Ser Pro Asp Asn Leu Asn Gln Ile Cys
            170               175               180

ctt cct aac cgt cag cat gtg gta tat ggt ccc tgg aac cta cca cag    692
Leu Pro Asn Arg Gln His Val Val Tyr Gly Pro Trp Asn Leu Pro Gln
            185               190               195

tcc agc tac tcc cac ctc act cgc cag ggt gag acc ctc aat ttc ctg    740
Ser Ser Tyr Ser His Leu Thr Arg Gln Gly Glu Thr Leu Asn Phe Leu
            200               205               210

gag att gga tat tcc cgc tgc tgc cac tgc cgc agc cac aca aac cgc    788
Glu Ile Gly Tyr Ser Arg Cys Cys His Cys Arg Ser His Thr Asn Arg
            215               220               225

cta gag tgt gcc aaa ctt gtg tgg gag gaa gca atg agc cga ttc tgt    836
Leu Glu Cys Ala Lys Leu Val Trp Glu Glu Ala Met Ser Arg Phe Cys
230               235               240               245

gag gcc gag ttc tcg gtc aag acc cga ccc cac tgg tgc tgc acg cgg    884
Glu Ala Glu Phe Ser Val Lys Thr Arg Pro His Trp Cys Cys Thr Arg
            250               255               260

cag ggg gag gct cgg ttc tcc tgc ttc cag gag gaa gct ccc cag cca    932
Gln Gly Glu Ala Arg Phe Ser Cys Phe Gln Glu Glu Ala Pro Gln Pro
            265               270               275

cac tac cag ctc cgg gcc tgc ccc agc cat cag cct gat att tcc tcg    980
His Tyr Gln Leu Arg Ala Cys Pro Ser His Gln Pro Asp Ile Ser Ser
            280               285               290

ggt ctt gag ctg cct ttc cct cct ggg gtg ccc aca ttg gac aat atc   1028
Gly Leu Glu Leu Pro Phe Pro Pro Gly Val Pro Thr Leu Asp Asn Ile
            295               300               305

aag aac atc tgc cac ctg agg cgc ttc cgc tct gtg cca cgc aac ctg   1076
Lys Asn Ile Cys His Leu Arg Arg Phe Arg Ser Val Pro Arg Asn Leu
310               315               320               325

cca gct act gac ccc cta caa agg gag ctg ctg gca ctg atc cag ctg   1124
Pro Ala Thr Asp Pro Leu Gln Arg Glu Leu Leu Ala Leu Ile Gln Leu
            330               335               340

gag agg gag ttc cag cgc tgc tgc cgc cag ggg aac aat cac acc tgt   1172
Glu Arg Glu Phe Gln Arg Cys Cys Arg Gln Gly Asn Asn His Thr Cys
            345               350               355

aca tgg aag gcc tgg gag gat acc ctt gac aaa tac tgt gac cgg gag   1220
Thr Trp Lys Ala Trp Glu Asp Thr Leu Asp Lys Tyr Cys Asp Arg Glu
            360               365               370

tat gct gtg aag acc cac cac cac ttg tgt tgc cgc cac cct ccc agc   1268
Tyr Ala Val Lys Thr His His His Leu Cys Cys Arg His Pro Pro Ser
            375               380               385

cct act cgg gat gag tgc ttt gcc cgt cgg gct cct tac ccc aac tat   1316
Pro Thr Arg Asp Glu Cys Phe Ala Arg Arg Ala Pro Tyr Pro Asn Tyr
```

200

```
        390                  395                  400                  405

gac cgg gac atc ttg acc att gac atc agt cga gtc acc ccc aac ctc   1364
Asp Arg Asp Ile Leu Thr Ile Asp Ile Ser Arg Val Thr Pro Asn Leu
            410                  415                  420

atg ggc cac ctc tgt gga aac caa aga gtt ctc acc aag cat aaa cat   1412
Met Gly His Leu Cys Gly Asn Gln Arg Val Leu Thr Lys His Lys His
            425                  430                  435

att cct ggg ctg atc cac aac atg act gcc cgc tgc tgt gac ctg cca   1460
Ile Pro Gly Leu Ile His Asn Met Thr Ala Arg Cys Cys Asp Leu Pro
            440                  445                  450

ttt cca gaa cag gcc tgc tgt gca gag gag gag aaa tta acc ttc atc   1508
Phe Pro Glu Gln Ala Cys Cys Ala Glu Glu Glu Lys Leu Thr Phe Ile
            455                  460                  465

aat gat ctg tgt ggt ccc cga cgt aac atc tgg cga gac cct gcc ctc   1556
Asn Asp Leu Cys Gly Pro Arg Arg Asn Ile Trp Arg Asp Pro Ala Leu
470                  475                  480                  485

tgc tgt tac ctg agt cct ggg gat gaa cag gtc aac tgc ttc aac atc   1604
Cys Cys Tyr Leu Ser Pro Gly Asp Glu Gln Val Asn Cys Phe Asn Ile
            490                  495                  500

aat tat ctg agg aac gtg gct cta gtg tct gga gac act gag aac gcc   1652
Asn Tyr Leu Arg Asn Val Ala Leu Val Ser Gly Asp Thr Glu Asn Ala
            505                  510                  515

aag ggc cag ggg gag cag ggc tca act gga gga aca aat atc agc tcc   1700
Lys Gly Gln Gly Glu Gln Gly Ser Thr Gly Gly Thr Asn Ile Ser Ser
            520                  525                  530

acc tct gag ccc aag gaa gaa tgagtcaccc cagagcccta gagggtcaga       1751
Thr Ser Glu Pro Lys Glu Glu
            535                  540

tggggggaac cccaccctgc cccacccatc tgaacactca ttacactaaa cacctcttg   1810
```

<210> 113
<211> 382
<212> PRT
<213> Homo sapiens

<400> 113

```
Met Gly Asp Trp Ser Ala Leu Gly Lys Leu Leu Asp Lys Val Gln Ala
 1               5                   10                  15

Tyr Ser Thr Ala Gly Gly Lys Val Trp Leu Ser Val Leu Phe Ile Phe
            20                  25                  30

Arg Ile Leu Leu Leu Gly Thr Ala Val Glu Ser Ala Trp Gly Asp Glu
        35                  40                  45

Gln Ser Ala Phe Arg Cys Asn Thr Gln Gln Pro Gly Cys Glu Asn Val
```

201

```
            50                      55                      60

Cys Tyr Asp Lys Ser Phe Pro Ile Ser His Val Arg Phe Trp Val Leu
65                  70                  75                  80

Gln Ile Ile Phe Val Ser Val Pro Thr Leu Leu Tyr Leu Ala His Val
                85                  90                  95

Phe Tyr Val Met Arg Lys Glu Glu Lys Leu Asn Lys Lys Glu Glu Glu
            100                 105                 110

Leu Lys Val Ala Gln Thr Asp Gly Val Asn Val Asp Met His Leu Lys
            115                 120                 125

Gln Ile Glu Ile Lys Lys Phe Lys Tyr Gly Ile Glu Glu His Gly Lys
            130                 135                 140

Val Lys Met Arg Gly Gly Leu Leu Arg Thr Tyr Ile Ile Ser Ile Leu
145                 150                 155                 160

Phe Lys Ser Ile Phe Glu Val Ala Phe Leu Leu Ile Gln Trp Tyr Ile
                165                 170                 175

Tyr Gly Phe Ser Leu Ser Ala Val Tyr Thr Cys Lys Arg Asp Pro Cys
            180                 185                 190

Pro His Gln Val Asp Cys Phe Leu Ser Arg Pro Thr Glu Lys Thr Ile
            195                 200                 205

Phe Ile Ile Phe Met Leu Val Val Ser Leu Val Ser Leu Ala Leu Asn
    210                 215                 220

Ile Ile Glu Leu Phe Tyr Val Phe Phe Lys Gly Val Lys Asp Arg Val
225                 230                 235                 240

Lys Gly Lys Ser Asp Pro Tyr His Ala Thr Ser Gly Ala Leu Ser Pro
            245                 250                 255

Ala Lys Asp Cys Gly Ser Gln Lys Tyr Ala Tyr Phe Asn Gly Cys Ser
            260                 265                 270

Ser Pro Thr Ala Pro Leu Ser Pro Met Ser Pro Pro Gly Tyr Lys Leu
            275                 280                 285

Val Thr Gly Asp Arg Asn Asn Ser Ser Cys Arg Asn Tyr Asn Lys Gln
    290                 295                 300

Ala Ser Glu Gln Thr Trp Ala Asn Tyr Ser Ala Glu Gln Asn Arg Met
305                 310                 315                 320

Gly Gln Ala Gly Ser Thr Ile Ser Asn Ser His Ala Gln Pro Phe Asp
            325                 330                 335

Phe Pro Asp Asp Asn Gln Asn Ser Lys Lys Leu Ala Ala Gly His Glu
            340                 345                 350

Leu Gln Pro Leu Ala Ile Val Asp Gln Arg Pro Ser Ser Arg Ala Ser
```

202

Ser Arg Ala Ser Ser Arg Pro Arg Pro Asp Asp Leu Glu Ile
    370   375   380

<210> 114
<211> 3074
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (201)..(1346)

<400> 114
aactttacg aggtatcagc acttttcttt cattaggggg aaggcgtgag gaaagtacca 60

aacagcagcg gagtttaaa ctttaaatag acaggtctga gtgcctgaac ttgcctttc 120

attttacttc atcctccaag gagttcaatc acttggcgtg acttcactac ttttaagcaa 180

aagagtggtg cccaggcaac atg ggt gac tgg agc gcc tta ggc aaa ctc ctt 233
              Met Gly Asp Trp Ser Ala Leu Gly Lys Leu Leu
               1   5   10

gac aag gtt caa gcc tac tca act gct gga ggg aag gtg tgg ctg tca 281
Asp Lys Val Gln Ala Tyr Ser Thr Ala Gly Gly Lys Val Trp Leu Ser
         15   20   25

gta ctt ttc att ttc cga atc ctg ctg ctg ggg aca gcg gtt gag tca 329
Val Leu Phe Ile Phe Arg Ile Leu Leu Leu Gly Thr Ala Val Glu Ser
         30   35   40

gcc tgg gga gat gag cag tct gcc ttt cgt tgt aac act cag caa cct 377
Ala Trp Gly Asp Glu Gln Ser Ala Phe Arg Cys Asn Thr Gln Gln Pro
    45   50   55

ggt tgt gaa aat gtc tgc tat gac aag tct ttc cca atc tct cat gtg 425
Gly Cys Glu Asn Val Cys Tyr Asp Lys Ser Phe Pro Ile Ser His Val
60   65   70   75

cgc ttc tgg gtc ctg cag atc ata ttt gtg tct gta ccc aca ctc ttg 473
Arg Phe Trp Val Leu Gln Ile Ile Phe Val Ser Val Pro Thr Leu Leu
                80   85   90

tac ctg gct cat gtg ttc tat gtg atg cga aag gaa gag aaa ctg aac 521
Tyr Leu Ala His Val Phe Tyr Val Met Arg Lys Glu Glu Lys Leu Asn
                95   100   105

aag aaa gag gaa gaa ctc aag gtt gcc caa act gat ggt gtc aat gtg 569
Lys Lys Glu Glu Glu Leu Lys Val Ala Gln Thr Asp Gly Val Asn Val
       110   115   120

gac atg cac ttg aag cag att gag ata aag aag ttc aag tac ggt att 617
Asp Met His Leu Lys Gln Ile Glu Ile Lys Lys Phe Lys Tyr Gly Ile
   125   130   135

203

```
gaa gag cat ggt aag gtg aaa atg cga ggg ggg ttg ctg cga acc tac    665
Glu Glu His Gly Lys Val Lys Met Arg Gly Gly Leu Leu Arg Thr Tyr
140             145             150             155

atc atc agt atc ctc ttc aag tct atc ttt gag gtg gcc ttc ttg ctg    713
Ile Ile Ser Ile Leu Phe Lys Ser Ile Phe Glu Val Ala Phe Leu Leu
            160             165             170

atc cag tgg tac atc tat gga ttc agc ttg agt gct gtt tac act tgc    761
Ile Gln Trp Tyr Ile Tyr Gly Phe Ser Leu Ser Ala Val Tyr Thr Cys
            175             180             185

aaa aga gat ccc tgc cca cat cag gtg gac tgt ttc ctc tct cgc ccc    809
Lys Arg Asp Pro Cys Pro His Gln Val Asp Cys Phe Leu Ser Arg Pro
            190             195             200

acg gag aaa acc atc ttc atc atc ttc atg ctg gtg gtg tcc ttg gtg    857
Thr Glu Lys Thr Ile Phe Ile Ile Phe Met Leu Val Val Ser Leu Val
    205             210             215

tcc ctg gcc ttg aat atc att gaa ctc ttc tat gtt ttc ttc aag ggc    905
Ser Leu Ala Leu Asn Ile Ile Glu Leu Phe Tyr Val Phe Phe Lys Gly
220             225             230             235

gtt aag gat cgg gtt aag gga aag agc gac cct tac cat gcg acc agt    953
Val Lys Asp Arg Val Lys Gly Lys Ser Asp Pro Tyr His Ala Thr Ser
            240             245             250

ggt gcg ctg agc cct gcc aaa gac tgt ggg tct caa aaa tat gct tat   1001
Gly Ala Leu Ser Pro Ala Lys Asp Cys Gly Ser Gln Lys Tyr Ala Tyr
            255             260             265

ttc aat ggc tgc tcc tca cca acc gct ccc ctc tcg cct atg tct cct   1049
Phe Asn Gly Cys Ser Ser Pro Thr Ala Pro Leu Ser Pro Met Ser Pro
            270             275             280

cct ggg tac aag ctg gtt act ggc gac aga aac aat tct tct tgc cgc   1097
Pro Gly Tyr Lys Leu Val Thr Gly Asp Arg Asn Asn Ser Ser Cys Arg
    285             290             295

aat tac aac aag caa gca agt gag caa acc tgg gct aat tac agt gca   1145
Asn Tyr Asn Lys Gln Ala Ser Glu Gln Thr Trp Ala Asn Tyr Ser Ala
300             305             310             315

gaa caa aat cga atg ggg cag gcg gga agc acc atc tct aac tcc cat   1193
Glu Gln Asn Arg Met Gly Gln Ala Gly Ser Thr Ile Ser Asn Ser His
            320             325             330

gca cag cct ttt gat ttc ccc gat gat aac cag aat tct aaa aaa cta   1241
Ala Gln Pro Phe Asp Phe Pro Asp Asp Asn Gln Asn Ser Lys Lys Leu
            335             340             345

gct gct gga cat gaa tta cag cca cta gcc att gtg gac cag cga cct   1289
Ala Ala Gly His Glu Leu Gln Pro Leu Ala Ile Val Asp Gln Arg Pro
            350             355             360
```

204

```
tca agc aga gcc agc agt cgt gcc agc agc aga cct cgg cct gat gac   1337
Ser Ser Arg Ala Ser Ser Arg Ala Ser Ser Arg Pro Arg Pro Asp Asp
    365                   370                   375

ctg gag atc tagatacagg cttgaaagca tcaagattcc actcaattgt           1386
Leu Glu Ile
380

ggagaagaaa aaaggtgctg tagaaagtgc accaggtgtt aattttgatc cggtggaggt 1446

ggtactcaac agccttattc atgaggctta gaaaacacaa agacattaga atacctaggt 1506

tcactggggg tgtatggggt agatgggtgg agagggaggg gataagagag gtgcatgttg 1566

gtatttaaag tagtggattc aaagaactta gattataaat aagagttcca ttaggtgata 1626

catagataag ggcttttttct ccccgcaaac acccctaaga atggttctgt gtatgtgaat 1686

gagcgggtgg taattgtggc taaatatttt tgttttacca agaaactgaa ataattctgg 1746

ccaggaataa atacttcctg aacatcttag gtcttttcaa caagaaaaag acagaggatt 1806

gtccttaagt ccctgctaaa acattccatt gttaaaattt gcactttgaa ggtaagcttt 1866

ctaggcctga ccctccaggt gtcaatggac ttgtgctact atattttttt attcttggta 1926

tcagtttaaa attcagacaa ggcccacaga ataagatttt ccatgcattt gcaaatacgt 1986

atattctttt tccatccact tgcacaatat cattaccatc acttttttcat cattcctcag 2046

ctactactca cattcattta atggtttctg taaacatttt taagacagtt gggatgtcac 2106

ttaacatttt ttttttgagc taaagtcagg gaatcaagcc atgcttaata tttaacaatc 2166

acttatatgt gtgtcgaaga gtttgttttg tttgtcatgt attggtacaa gcagatacag 2226

tataaactca caaacacaga tttgaaaata atgcacatat ggtgttcaaa tttgaacctt 2286

tctcatggat ttttgtggtg tgggccaata tggtgtttac attatataat tcctgctgtg 2346

gcaagtaaag cacacttttt ttttctccta aaatgttttt ccctgtgtat cctattatgg 2406

atactggttt tgttaattat gattctttat tttctctcct ttttttagga tatagcagta 2466

atgctattac tgaaatgaat ttcctttttc tgaaatgtaa tcattgatgc ttgaatgata 2526

gaattttagt actgtaaaca ggctttagtc attaatgtga gagacttaga aaaaaatgct 2586

tagagtggac tattaaatgt gcctaaatga attttgcagt aactggtatt cttgggtttt 2646

cctacttaat acacagtaat tcagaacttg tattctatta tgagtttagc agtctttttgg 2706

agtgaccagc aactttgatg tttgcactaa gatttttattt ggaatgcaag agaggttgaa 2766

agaggattca gtagtacaca tacaactaat ttatttgaac tatatgttga agacatctac 2826

cagtttctcc aaatgccttt tttaaaactc atcacagaag attggtgaaa atgctgagta 2886
```

205

tgacactttt cttcttgcat gcatgtcagc tacataaaca gttttgtaca atgaaaatta 2946

ctaatttgtt tgacattcca tgttaaacta cggtcatgtt cagcttcatt gcatgtaatg 3006

tagacctagt ccatcagatc atgtgttctg gagagtgttc tttattcaat aaagttttaa 3066

tttagtat 3074

<210> 115
<211> 382
<212> PRT
<213> Homo sapiens

<400> 115
Met Gly Asp Trp Ser Ala Leu Gly Lys Leu Leu Asp Lys Val Gln Ala
 1   5   10   15

Tyr Ser Thr Ala Gly Gly Lys Val Trp Leu Ser Val Leu Phe Ile Phe
            20   25   30

Arg Ile Leu Leu Leu Gly Thr Ala Val Glu Ser Ala Trp Gly Asp Glu
         35   40   45

Gln Ser Ala Phe Arg Cys Asn Thr Gln Gln Pro Gly Cys Glu Asn Val
    50   55   60

Cys Tyr Asp Lys Ser Phe Pro Ile Ser His Val Arg Phe Trp Val Leu
65   70   75   80

Gln Ile Ile Phe Val Ser Val Pro Thr Leu Leu Tyr Leu Ala His Val
                85   90   95

Phe Tyr Val Met Arg Lys Glu Glu Lys Leu Asn Lys Lys Glu Glu Glu
            100   105   110

Leu Lys Val Ala Gln Thr Asp Gly Val Asn Val Asp Met His Leu Lys
         115   120   125

Gln Ile Glu Ile Lys Lys Phe Lys Tyr Gly Ile Glu Glu His Gly Lys
    130   135   140

Val Lys Met Arg Gly Gly Leu Leu Arg Thr Tyr Ile Ile Ser Ile Leu
145   150   155   160

Phe Lys Ser Ile Phe Glu Val Ala Phe Leu Leu Ile Gln Trp Tyr Ile
                165   170   175

Tyr Gly Phe Ser Leu Ser Ala Val Tyr Thr Cys Lys Arg Asp Pro Cys
            180   185   190

Pro His Gln Val Asp Cys Phe Leu Ser Arg Pro Thr Glu Lys Thr Ile
         195   200   205

Phe Ile Ile Phe Met Leu Val Val Ser Leu Val Ser Leu Ala Leu Asn
    210   215   220

206

```
Ile Ile Glu Leu Phe Tyr Val Phe Phe Lys Gly Val Lys Asp Arg Val
225                 230             235             240

Lys Gly Lys Ser Asp Pro Tyr His Ala Thr Ser Gly Ala Leu Ser Pro
                245             250             255

Ala Lys Asp Cys Gly Ser Gln Lys Tyr Ala Tyr Phe Asn Gly Cys Ser
            260             265             270

Ser Pro Thr Ala Pro Leu Ser Pro Met Ser Pro Pro Gly Tyr Lys Leu
        275             280             285

Val Thr Gly Asp Arg Asn Asn Ser Ser Cys Arg Asn Tyr Asn Lys Gln
    290             295             300

Ala Ser Glu Gln Asn Trp Ala Asn Tyr Ser Ala Glu Gln Asn Arg Met
305                 310             315             320

Gly Gln Ala Gly Ser Thr Ile Ser Asn Ser His Ala Gln Pro Phe Asp
                325             330             335

Phe Pro Asp Asp Asn Gln Asn Ser Lys Lys Leu Ala Ala Gly His Glu
            340             345             350

Leu Gln Pro Leu Ala Ile Val Asp Gln Arg Pro Ser Ser Arg Ala Ser
        355             360             365

Ser Arg Ala Ser Ser Arg Pro Arg Pro Asp Asp Leu Glu Ile
    370             375             380
```

```
<210> 116
<211> 3074
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (201)..(1346)

<400> 116
aactttacg aggtatcagc acttttcttt cattagggggg aaggcgtgag gaaagtacca 60

aacagcagcg gagtttttaaa ctttaaatag acaggtctga gtgcctgaac ttgcctttttc 120

attttacttc atcctccaag gagttcaatc acttggcgtg acttcactac ttttaagcaa 180

aagagtggtg cccaggcaac atg ggt gac tgg agc gcc tta ggc aaa ctc ctt 233
                       Met Gly Asp Trp Ser Ala Leu Gly Lys Leu Leu
                        1               5                   10

gac aag gtt caa gcc tac tca act gct gga ggg aag gtg tgg ctg tca    281
Asp Lys Val Gln Ala Tyr Ser Thr Ala Gly Gly Lys Val Trp Leu Ser
            15              20              25

gta ctt ttc att ttc cga atc ctg ctg ctg ggg aca gcg gtt gag tca    329
```

```
Val Leu Phe Ile Phe Arg Ile Leu Leu Leu Gly Thr Ala Val Glu Ser
        30                      35                  40
```

```
gcc tgg gga gat gag cag tct gcc ttt cgt tgt aac act cag caa cct    377
Ala Trp Gly Asp Glu Gln Ser Ala Phe Arg Cys Asn Thr Gln Gln Pro
    45                      50                  55
```

```
ggt tgt gaa aat gtc tgc tat gac aag tct ttc cca atc tct cat gtg    425
Gly Cys Glu Asn Val Cys Tyr Asp Lys Ser Phe Pro Ile Ser His Val
60                      65                  70                  75
```

```
cgc ttc tgg gtc ctg cag atc ata ttt gtg tct gta ccc aca ctc ttg    473
Arg Phe Trp Val Leu Gln Ile Ile Phe Val Ser Val Pro Thr Leu Leu
                80                      85                  90
```

```
tac ctg gct cat gtg ttc tat gtg atg cga aag gaa gag aaa ctg aac    521
Tyr Leu Ala His Val Phe Tyr Val Met Arg Lys Glu Glu Lys Leu Asn
                95                      100                 105
```

```
aag aaa gag gaa gaa ctc aag gtt gcc caa act gat ggt gtc aat gtg    569
Lys Lys Glu Glu Glu Leu Lys Val Ala Gln Thr Asp Gly Val Asn Val
            110                     115                 120
```

```
gac atg cac ttg aag cag att gag ata aag aag ttc aag tac ggt att    617
Asp Met His Leu Lys Gln Ile Glu Ile Lys Lys Phe Lys Tyr Gly Ile
    125                     130                 135
```

```
gaa gag cat ggt aag gtg aaa atg cga ggg ggg ttg ctg cga acc tac    665
Glu Glu His Gly Lys Val Lys Met Arg Gly Gly Leu Leu Arg Thr Tyr
140                     145                 150                 155
```

```
atc atc agt atc ctc ttc aag tct atc ttt gag gtg gcc ttc ttg ctg    713
Ile Ile Ser Ile Leu Phe Lys Ser Ile Phe Glu Val Ala Phe Leu Leu
                160                     165                 170
```

```
atc cag tgg tac atc tat gga ttc agc ttg agt gct gtt tac act tgc    761
Ile Gln Trp Tyr Ile Tyr Gly Phe Ser Leu Ser Ala Val Tyr Thr Cys
                175                     180                 185
```

```
aaa aga gat ccc tgc cca cat cag gtg gac tgt ttc ctc tct cgc ccc    809
Lys Arg Asp Pro Cys Pro His Gln Val Asp Cys Phe Leu Ser Arg Pro
            190                     195                 200
```

```
acg gag aaa acc atc ttc atc atc ttc atg ctg gtg gtg tcc ttg gtg    857
Thr Glu Lys Thr Ile Phe Ile Ile Phe Met Leu Val Val Ser Leu Val
    205                     210                 215
```

```
tcc ctg gcc ttg aat atc att gaa ctc ttc tat gtt ttc ttc aag ggc    905
Ser Leu Ala Leu Asn Ile Ile Glu Leu Phe Tyr Val Phe Phe Lys Gly
220                     225                 230                 235
```

```
gtt aag gat cgg gtt aag gga aag agc gac cct tac cat gcg acc agt    953
Val Lys Asp Arg Val Lys Gly Lys Ser Asp Pro Tyr His Ala Thr Ser
                240                     245                 250
```

```
ggt gcg ctg agc cct gcc aaa gac tgt ggg tct caa aaa tat gct tat    1001
Gly Ala Leu Ser Pro Ala Lys Asp Cys Gly Ser Gln Lys Tyr Ala Tyr
```

208

```
              255                    260                      265
ttc aat ggc tgc tcc tca cca acc gct ccc ctc tcg cct atg tct cct   1049
Phe Asn Gly Cys Ser Ser Pro Thr Ala Pro Leu Ser Pro Met Ser Pro
        270                    275                    280

cct ggg tac aag ctg gtt act ggc gac aga aac aat tct tct tgc cgc   1097
Pro Gly Tyr Lys Leu Val Thr Gly Asp Arg Asn Asn Ser Ser Cys Arg
        285                    290                    295

aat tac aac aag caa gca agt gag caa aac tgg gct aat tac agt gca   1145
Asn Tyr Asn Lys Gln Ala Ser Glu Gln Asn Trp Ala Asn Tyr Ser Ala
300                    305                    310                    315

gaa caa aat cga atg ggg cag gcg gga agc acc atc tct aac tcc cat   1193
Glu Gln Asn Arg Met Gly Gln Ala Gly Ser Thr Ile Ser Asn Ser His
                320                    325                    330

gca cag cct ttt gat ttc ccc gat gat aac cag aat tct aaa aaa cta   1241
Ala Gln Pro Phe Asp Phe Pro Asp Asp Asn Gln Asn Ser Lys Lys Leu
                335                    340                    345

gct gct gga cat gaa tta cag cca cta gcc att gtg gac cag cga cct   1289
Ala Ala Gly His Glu Leu Gln Pro Leu Ala Ile Val Asp Gln Arg Pro
                350                    355                    360

tca agc aga gcc agc agt cgt gcc agc agc aga cct cgg cct gat gac   1337
Ser Ser Arg Ala Ser Ser Arg Ala Ser Ser Arg Pro Arg Pro Asp Asp
        365                    370                    375

ctg gag atc tagatacagg cttgaaagca tcaagattcc actcaattgt           1386
Leu Glu Ile
380

ggagaagaaa aaaggtgctg tagaaagtgc accaggtgtt aattttgatc cggtggaggt 1446

ggtactcaac agccttattc atgaggctta gaaaacacaa agacattaga atacctaggt 1506

tcactggggg tgtatggggt agatgggtgg agagggaggg dataagagag gtgcatgttg 1566

gtatttaaag tagtggattc aaagaactta gattataaat aagagttcca ttaggtgata 1626

catagataag ggctttttct ccccgcaaac acccctaaga atggttctgt gtatgtgaat 1686

gagcgggtgg taattgtggc taaatatttt tgttttacca agaaactgaa ataattctgg 1746

ccaggaataa atacttcctg aacatcttag gtcttttcaa caagaaaaag acagaggatt 1806

gtccttaagt ccctgctaaa acattccatt gttaaaattt gcactttgaa ggtaagcttt 1866

ctaggcctga ccctccaggt gtcaatggac ttgtgctact atattttttt attcttggta 1926

tcagtttaaa attcagacaa ggcccacaga ataagatttt ccatgcattt gcaaatacgt 1986

atattctttt tccatccact tgcacaatat cattaccatc acttttttcat cattcctcag 2046

ctactactca cattcattta atggtttctg taaacatttt taagacagtt gggatgtcac 2106
```

209

```
ttaacatttt tttttttgagc taaagtcagg gaatcaagcc atgcttaata tttaacaatc 2166

acttatatgt gtgtcgaaga gtttgttttg tttgtcatgt attggtacaa gcagatacag 2226

tataaactca caaacacaga tttgaaaata atgcacatat ggtgttcaaa tttgaacctt 2286

tctcatggat ttttgtggtg tgggccaata tggtgtttac attatataat tcctgctgtg 2346

gcaagtaaag cacacttttt ttttctccta aaatgttttt ccctgtgtat cctattatgg 2406

atactggttt tgttaattat gattctttat tttctctcct ttttttagga tatagcagta 2466

atgctattac tgaaatgaat ttccttttttc tgaaatgtaa tcattgatgc ttgaatgata 2526

gaattttagt actgtaaaca ggctttagtc attaatgtga gagacttaga aaaaaatgct 2586

tagagtggac tattaaatgt gcctaaatga attttgcagt aactggtatt cttgggtttt 2646

cctacttaat acacagtaat tcagaacttg tattctatta tgagtttagc agtcttttgg 2706

agtgaccagc aactttgatg tttgcactaa gattttatt ggaatgcaag agaggttgaa 2766

agaggattca gtagtacaca tacaactaat ttatttgaac tatatgttga agacatctac 2826

cagtttctcc aaatgccttt tttaaaactc atcacagaag attggtgaaa atgctgagta 2886

tgacactttt cttcttgcat gcatgtcagc tacataaaca gttttgtaca atgaaaatta 2946

ctaatttgtt tgacattcca tgttaaacta cggtcatgtt cagcttcatt gcatgtaatg 3006

tagacctagt ccatcagatc atgtgttctg gagagtgttc tttattcaat aaagtttttaa 3066

tttagtat                                                             3074
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<210> 117
<211> 398
<212> PRT
<213> Homo sapiens

<400> 117
Met Glu Gly Ala Ala Leu Leu Arg Val Ser Val Leu Cys Ile Trp Met
1               5                   10                  15

Ser Ala Leu Phe Leu Gly Val Gly Val Arg Ala Glu Glu Ala Gly Ala
            20                  25                  30

Arg Val Gln Gln Asn Val Pro Ser Gly Thr Asp Thr Gly Asp Pro Gln
        35                  40                  45

Ser Lys Pro Leu Gly Asp Trp Ala Ala Gly Thr Met Asp Pro Glu Ser
    50                  55                  60

Ser Ile Phe Ile Glu Asp Ala Ile Lys Tyr Phe Lys Glu Lys Val Ser
65                  70                  75                  80
```

210

```
Thr Gln Asn Leu Leu Leu Leu Leu Thr Asp Asn Glu Ala Trp Asn Gly
              85                      90                      95

Phe Val Ala Ala Ala Glu Leu Pro Arg Asn Glu Ala Asp Glu Leu Arg
              100                     105                     110

Lys Ala Leu Asp Asn Leu Ala Arg Gln Met Ile Met Lys Asp Lys Asn
              115                     120                     125

Trp His Asp Lys Gly Gln Gln Tyr Arg Asn Trp Phe Leu Lys Glu Phe
    130                     135                 140

Pro Arg Leu Lys Ser Lys Leu Glu Asp Asn Ile Arg Arg Leu Arg Ala
145                     150                 155                 160

Leu Ala Asp Gly Val Gln Lys Val His Lys Gly Thr Thr Ile Ala Asn
              165                     170                 175

Val Val Ser Gly Ser Leu Ser Ile Ser Ser Gly Ile Leu Thr Leu Val
              180                     185                 190

Gly Met Gly Leu Ala Pro Phe Thr Glu Gly Gly Ser Leu Val Leu Leu
              195                     200                 205

Glu Pro Gly Met Glu Leu Gly Ile Thr Ala Ala Leu Thr Gly Ile Thr
    210                     215                 220

Ser Ser Thr Ile Asp Tyr Gly Lys Lys Trp Trp Thr Gln Ala Gln Ala
225                     230                 235                 240

His Asp Leu Val Ile Lys Ser Leu Asp Lys Leu Lys Glu Val Lys Glu
              245                     250                 255

Phe Leu Gly Glu Asn Ile Ser Asn Phe Leu Ser Leu Ala Gly Asn Thr
              260                     265                 270

Tyr Gln Leu Thr Arg Gly Ile Gly Lys Asp Ile Arg Ala Leu Arg Arg
    275                     280                 285

Ala Arg Ala Asn Leu Gln Ser Val Pro His Ala Ser Ala Ser Arg Pro
    290                     295                 300

Arg Val Thr Glu Pro Ile Ser Ala Glu Ser Gly Glu Gln Val Glu Arg
305                     310                 315                 320

Val Asn Glu Pro Ser Ile Leu Glu Met Ser Arg Gly Val Lys Leu Thr
              325                     330                 335

Asp Val Ala Pro Val Ser Phe Phe Leu Val Leu Asp Val Val Tyr Leu
              340                     345                 350

Val Tyr Glu Ser Lys His Leu His Glu Gly Ala Lys Ser Glu Thr Ala
    355                     360                 365

Glu Glu Leu Lys Lys Val Ala Gln Glu Leu Glu Glu Lys Leu Asn Ile
    370                     375                 380
```

211

```
Leu Asn Asn Asn Tyr Lys Ile Leu Gln Ala Asp Gln Glu Leu
385                 390                 395


<210> 118
<211> 2054
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (76)..(1269)

<400> 118
cacacagctc agaacagctg gatcttgctc agtctctgcc aggggaagat tccttggagg 60


aggccctgca gcgac atg gag gga gct gct ttg ctg aga gtc tct gtc ctc   111
              Met Glu Gly Ala Ala Leu Leu Arg Val Ser Val Leu
               1               5                  10

tgc atc tgg atg agt gca ctt ttc ctt ggt gtg gga gtg agg gca gag   159
Cys Ile Trp Met Ser Ala Leu Phe Leu Gly Val Gly Val Arg Ala Glu
          15                  20                  25

gaa gct gga gcg agg gtg caa caa aac gtt cca agt ggg aca gat act   207
Glu Ala Gly Ala Arg Val Gln Gln Asn Val Pro Ser Gly Thr Asp Thr
     30                  35                  40

gga gat cct caa agt aag ccc ctc ggt gac tgg gct gct ggc acc atg   255
Gly Asp Pro Gln Ser Lys Pro Leu Gly Asp Trp Ala Ala Gly Thr Met
 45              50                  55                  60

gac cca gag agc agt atc ttt att gag gat gcc att aag tat ttc aag   303
Asp Pro Glu Ser Ser Ile Phe Ile Glu Asp Ala Ile Lys Tyr Phe Lys
                 65                  70                  75

gaa aaa gtg agc aca cag aat ctg cta ctc ctg ctg act gat aat gag   351
Glu Lys Val Ser Thr Gln Asn Leu Leu Leu Leu Leu Thr Asp Asn Glu
             80                  85                  90

gcc tgg aac gga ttc gtg gct gct gct gaa ctg ccc agg aat gag gca   399
Ala Trp Asn Gly Phe Val Ala Ala Ala Glu Leu Pro Arg Asn Glu Ala
         95                  100                 105

gat gag ctc cgt aaa gct ctg gac aac ctt gca aga caa atg atc atg   447
Asp Glu Leu Arg Lys Ala Leu Asp Asn Leu Ala Arg Gln Met Ile Met
     110                 115                 120

aaa gac aaa aac tgg cac gat aaa ggc cag cag tac aga aac tgg ttt   495
Lys Asp Lys Asn Trp His Asp Lys Gly Gln Gln Tyr Arg Asn Trp Phe
125                 130                 135                 140

ctg aaa gag ttt cct cgg ttg aaa agt aag ctt gag gat aac ata aga   543
Leu Lys Glu Phe Pro Arg Leu Lys Ser Lys Leu Glu Asp Asn Ile Arg
                145                 150                 155

agg ctc cgt gcc ctt gca gat ggg gtt cag aag gtc cac aaa ggc acc   591
```

212

```
Arg Leu Arg Ala Leu Ala Asp Gly Val Gln Lys Val His Lys Gly Thr
        160             165             170

acc atc gcc aat gtg gtg tct ggc tct ctc agc att tcc tct ggc atc    639
Thr Ile Ala Asn Val Val Ser Gly Ser Leu Ser Ile Ser Ser Gly Ile
        175             180             185

ctg acc ctc gtc ggc atg ggt ctg gca ccc ttc aca gag gga ggc agc    687
Leu Thr Leu Val Gly Met Gly Leu Ala Pro Phe Thr Glu Gly Gly Ser
        190             195             200

ctt gta ctc ttg gaa cct ggg atg gag ttg gga atc aca gca gct ttg    735
Leu Val Leu Leu Glu Pro Gly Met Glu Leu Gly Ile Thr Ala Ala Leu
205             210             215             220

acc ggg att acc agc agt acc ata gac tac gga aag aag tgg tgg aca    783
Thr Gly Ile Thr Ser Ser Thr Ile Asp Tyr Gly Lys Lys Trp Trp Thr
                225             230             235

caa gcc caa gcc cac gac ctg gtc atc aaa agc ctt gac aaa ttg aag    831
Gln Ala Gln Ala His Asp Leu Val Ile Lys Ser Leu Asp Lys Leu Lys
                240             245             250

gag gtg aag gag ttt ttg ggt gag aac ata tcc aac ttt ctt tcc tta    879
Glu Val Lys Glu Phe Leu Gly Glu Asn Ile Ser Asn Phe Leu Ser Leu
            255             260             265

gct ggc aat act tac caa ctc aca cga ggc att ggg aag gac atc cgt    927
Ala Gly Asn Thr Tyr Gln Leu Thr Arg Gly Ile Gly Lys Asp Ile Arg
        270             275             280

gcc ctc aga cga gcc aga gcc aat ctt cag tca gta ccg cat gcc tca    975
Ala Leu Arg Arg Ala Arg Ala Asn Leu Gln Ser Val Pro His Ala Ser
285             290             295             300

gcc tca cgc ccc cgg gtc act gag cca atc tca gct gaa agc ggt gaa   1023
Ala Ser Arg Pro Arg Val Thr Glu Pro Ile Ser Ala Glu Ser Gly Glu
                305             310             315

cag gtg gag aga gtt aat gaa ccc agc atc ctg gaa atg agc aga gga   1071
Gln Val Glu Arg Val Asn Glu Pro Ser Ile Leu Glu Met Ser Arg Gly
                320             325             330

gtc aag ctc acg gat gtg gcc cct gta agc ttc ttt ctt gtg ctg gat   1119
Val Lys Leu Thr Asp Val Ala Pro Val Ser Phe Phe Leu Val Leu Asp
            335             340             345

gta gtc tac ctc gtg tac gaa tca aag cac tta cat gag ggg gca aag   1167
Val Val Tyr Leu Val Tyr Glu Ser Lys His Leu His Glu Gly Ala Lys
        350             355             360

tca gag aca gct gag gag ctg aag aag gtg gct cag gag ctg gag gag   1215
Ser Glu Thr Ala Glu Glu Leu Lys Lys Val Ala Gln Glu Leu Glu Glu
365             370             375             380

aag cta aac att ctc aac aat aat tat aag att ctg cag gcg gac caa   1263
Lys Leu Asn Ile Leu Asn Asn Asn Tyr Lys Ile Leu Gln Ala Asp Gln
```

213

<pre>
                 385   390   395
gaa ctg tgaccacagg gcagggcagc caccaggaga gatatgcctg gcaggggcca   1319
Glu Leu

ggacaaaatg caaacttttt tttttctga dacagagtct tgctctgtcg ccaagttgca   1379

gtgagccgag atatcgccac tgcactccag cctgggtgac agagcgagac tccatctcaa   1439

aaaaaaaaaa aaaaagaata tattgacgga agaatagaga ggaggcttga aggaaccagc   1499

aatgagaagg ccaggaaaag aaagagctga aaatggagaa agcccaagag ttagaacagt   1559

tggatacagg agaagaaaca gcggctccac tacagâccca gccccaggtt caatgtcctc   1619

cgaagaatga agtctttccc tggtgatggt cccctgccct gtctttccag catccactct   1679

cccttgtcct cctgggggca tatctcagtc aggcagcggc ttcctgatga tggtcgttgg   1739

ggtggttgtc atgtgatggg tcccctccag gttactaaag ggtgcatgtc ccctgcttga   1799

acactgaagg gcaggtggtg agccatggcc atggtcccca gctgaggagc aggtgtccct   1859

gagaacccaa acttcccaga gagtatgtga gaaccaacca atgaaaacag tcccatcgct   1919

cttacccggt aagtaaacag tcagaaaatt agcatgaaag cagtttagca ttgggaggaa   1979

gctcagatct ctagagctgt cttgtccccg cccaggattg acctgtgtaa gtcccaataa   2039

actcacctac tcatc   2054
</pre>

<210> 119
<211> 398
<212> PRT
<213> Homo sapiens

<400> 119

<pre>
Met Glu Gly Ala Ala Leu Leu Arg Val Ser Val Leu Cys Ile Trp Met
 1   5   10   15

Ser Ala Leu Phe Leu Gly Val Arg Val Arg Ala Glu Glu Ala Gly Ala
            20   25   30

Arg Val Gln Gln Asn Val Pro Ser Gly Thr Asp Thr Gly Asp Pro Gln
        35   40   45

Ser Lys Pro Leu Gly Asp Trp Ala Ala Gly Thr Met Asp Pro Glu Ser
    50   55   60

Ser Ile Phe Ile Glu Asp Ala Ile Lys Tyr Phe Lys Glu Lys Val Ser
65   70   75   80

Thr Gln Asn Leu Leu Leu Leu Leu Thr Asp Asn Glu Ala Trp Asn Gly
                85   90   95

Phe Val Ala Ala Ala Glu Leu Pro Arg Asn Glu Ala Asp Glu Leu Arg
</pre>

214

```
            100                     105                     110
Lys Ala Leu Asp Asn Leu Ala Arg Gln Met Ile Met Lys Asp Lys Asn
        115                 120                 125

Trp His Asp Lys Gly Gln Gln Tyr Arg Asn Trp Phe Leu Lys Glu Phe
    130                 135                 140

Pro Arg Leu Lys Ser Lys Leu Glu Asp Asn Ile Arg Arg Leu Arg Ala
145                 150                 155                 160

Leu Ala Asp Gly Val Gln Lys Val His Lys Gly Thr Thr Ile Ala Asn
                165                 170                 175

Val Val Ser Gly Ser Leu Ser Ile Ser Ser Gly Ile Leu Thr Leu Val
            180                 185                 190

Gly Met Gly Leu Ala Pro Phe Thr Glu Gly Gly Ser Leu Val Leu Leu
            195                 200                 205

Glu Pro Gly Met Glu Leu Gly Ile Thr Ala Ala Leu Thr Gly Ile Thr
    210                 215                 220

Ser Ser Thr Ile Asp Tyr Gly Lys Lys Trp Trp Thr Gln Ala Gln Ala
225                 230                 235                 240

His Asp Leu Val Ile Lys Ser Leu Asp Lys Leu Lys Glu Val Lys Glu
                245                 250                 255

Phe Leu Gly Glu Asn Ile Ser Asn Phe Leu Ser Leu Ala Gly Asn Thr
            260                 265                 270

Tyr Gln Leu Thr Arg Gly Ile Gly Lys Asp Ile Arg Ala Leu Arg Arg
        275                 280                 285

Ala Arg Ala Asn Leu Gln Ser Val Pro His Ala Ser Ala Ser Arg Pro
    290                 295                 300

Arg Val Thr Glu Pro Ile Ser Ala Glu Ser Gly Glu Gln Val Glu Arg
305                 310                 315                 320

Val Asn Glu Pro Ser Ile Leu Glu Met Ser Arg Gly Val Lys Leu Thr
                325                 330                 335

Asp Val Ala Pro Val Ser Phe Phe Leu Val Leu Asp Val Val Tyr Leu
            340                 345                 350

Val Tyr Glu Ser Lys His Leu His Glu Gly Ala Lys Ser Glu Thr Ala
        355                 360                 365

Glu Glu Leu Lys Lys Val Ala Gln Glu Leu Glu Glu Lys Leu Asn Ile
    370                 375                 380

Leu Asn Asn Asn Tyr Lys Ile Leu Gln Ala Asp Gln Glu Leu
385                 390                 395
```

215

<210> 120
<211> 2054
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (76)..(1269)

<400> 120
cacacagctc agaacagctg gatcttgctc agtctctgcc aggggaagat tccttggagg 60

aggccctgca gcgac atg gag gga gct gct ttg ctg aga gtc tct gtc ctc 111
            Met Glu Gly Ala Ala Leu Leu Arg Val Ser Val Leu
            1   5   10

tgc atc tgg atg agt gca ctt ttc ctt ggt gtg aga gtg agg gca gag 159
Cys Ile Trp Met Ser Ala Leu Phe Leu Gly Val Arg Val Arg Ala Glu
        15   20   25

gaa gct gga gcg agg gtg caa caa aac gtt cca agt ggg aca gat act 207
Glu Ala Gly Ala Arg Val Gln Gln Asn Val Pro Ser Gly Thr Asp Thr
    30   35   40

gga gat cct caa agt aag ccc ctc ggt gac tgg gct gct ggc acc atg 255
Gly Asp Pro Gln Ser Lys Pro Leu Gly Asp Trp Ala Ala Gly Thr Met
45   50   55   60

gac cca gag agc agt atc ttt att gag gat gcc att aag tat ttc aag 303
Asp Pro Glu Ser Ser Ile Phe Ile Glu Asp Ala Ile Lys Tyr Phe Lys
                65   70   75

gaa aaa gtg agc aca cag aat ctg cta ctc ctg ctg act gat aat gag 351
Glu Lys Val Ser Thr Gln Asn Leu Leu Leu Leu Leu Thr Asp Asn Glu
                80   85   90

gcc tgg aac gga ttc gtg gct gct gct gaa ctg ccc agg aat gag gca 399
Ala Trp Asn Gly Phe Val Ala Ala Ala Glu Leu Pro Arg Asn Glu Ala
        95   100   105

gat gag ctc cgt aaa gct ctg gac aac ctt gca aga caa atg atc atg 447
Asp Glu Leu Arg Lys Ala Leu Asp Asn Leu Ala Arg Gln Met Ile Met
    110   115   120

aaa gac aaa aac tgg cac gat aaa ggc cag cag tac aga aac tgg ttt 495
Lys Asp Lys Asn Trp His Asp Lys Gly Gln Gln Tyr Arg Asn Trp Phe
125   130   135   140

ctg aaa gag ttt cct cgg ttg aaa agt aag ctt gag gat aac ata aga 543
Leu Lys Glu Phe Pro Arg Leu Lys Ser Lys Leu Glu Asp Asn Ile Arg
                145   150   155

agg ctc cgt gcc ctt gca gat ggg gtt cag aag gtc cac aaa ggc acc 591
Arg Leu Arg Ala Leu Ala Asp Gly Val Gln Lys Val His Lys Gly Thr
                160   165   170

acc atc gcc aat gtg gtg tct ggc tct ctc agc att tcc tct ggc atc 639

216

```
Thr Ile Ala Asn Val Val Ser Gly Ser Leu Ser Ile Ser Ser Gly Ile
        175                 180             185

ctg acc ctc gtc ggc atg ggt ctg gca ccc ttc aca gag gga ggc agc      687
Leu Thr Leu Val Gly Met Gly Leu Ala Pro Phe Thr Glu Gly Gly Ser
        190                 195             200

ctt gta ctc ttg gaa cct ggg atg gag ttg gga atc aca gca gct ttg      735
Leu Val Leu Leu Glu Pro Gly Met Glu Leu Gly Ile Thr Ala Ala Leu
205                 210             215                 220

acc ggg att acc agc agt acc ata gac tac gga aag aag tgg tgg aca      783
Thr Gly Ile Thr Ser Ser Thr Ile Asp Tyr Gly Lys Lys Trp Trp Thr
                225             230                 235

caa gcc caa gcc cac gac ctg gtc atc aaa agc ctt gac aaa ttg aag      831
Gln Ala Gln Ala His Asp Leu Val Ile Lys Ser Leu Asp Lys Leu Lys
                240             245                 250

gag gtg aag gag ttt ttg ggt gag aac ata tcc aac ttt ctt tcc tta      879
Glu Val Lys Glu Phe Leu Gly Glu Asn Ile Ser Asn Phe Leu Ser Leu
        255                 260             265

gct ggc aat act tac caa ctc aca cga ggc att ggg aag gac atc cgt      927
Ala Gly Asn Thr Tyr Gln Leu Thr Arg Gly Ile Gly Lys Asp Ile Arg
    270                 275             280

gcc ctc aga cga gcc aga gcc aat ctt cag tca gta ccg cat gcc tca      975
Ala Leu Arg Arg Ala Arg Ala Asn Leu Gln Ser Val Pro His Ala Ser
285                 290             295                 300

gcc tca cgc ccc cgg gtc act gag cca atc tca gct gaa agc ggt gaa     1023
Ala Ser Arg Pro Arg Val Thr Glu Pro Ile Ser Ala Glu Ser Gly Glu
                305             310                 315

cag gtg gag aga gtt aat gaa ccc agc atc ctg gaa atg agc aga gga     1071
Gln Val Glu Arg Val Asn Glu Pro Ser Ile Leu Glu Met Ser Arg Gly
                320             325                 330

gtc aag ctc acg gat gtg gcc cct gta agc ttc ttt ctt gtg ctg gat     1119
Val Lys Leu Thr Asp Val Ala Pro Val Ser Phe Phe Leu Val Leu Asp
        335                 340             345

gta gtc tac ctc gtg tac gaa tca aag cac tta cat gag ggg gca aag     1167
Val Val Tyr Leu Val Tyr Glu Ser Lys His Leu His Glu Gly Ala Lys
        350                 355             360

tca gag aca gct gag gag ctg aag aag gtg gct cag gag ctg gag gag     1215
Ser Glu Thr Ala Glu Glu Leu Lys Lys Val Ala Gln Glu Leu Glu Glu
365                 370             375                 380

aag cta aac att ctc aac aat aat tat aag att ctg cag gcg gac caa     1263
Lys Leu Asn Ile Leu Asn Asn Asn Tyr Lys Ile Leu Gln Ala Asp Gln
                385             390                 395

gaa ctg tgaccacagg gcagggcagc caccaggaga gatatgcctg gcaggggcca     1319
Glu Leu
```

217

```
ggacaaaatg caaacttttt tttttctga dacagagtct tgctctgtcg ccaagttgca 1379

gtgagccgag atatcgccac tgcactccag cctgggtgac agagcgagac tccatctcaa 1439

aaaaaaaaaa aaaaagaata tattgacgga agaatagaga ggaggcttga aggaaccagc 1499

aatgagaagg ccaggaaaag aaagagctga aaatggagaa agcccaagag ttagaacagt 1559

tggatacagg agaagaaaca gcggctccac tacagaccca gccccaggtt caatgtcctc 1619

cgaagaatga agtctttccc tggtgatggt cccctgccct gtctttccag catccactct 1679

cccttgtcct cctgggggca tatctcagtc aggcagcggc ttcctgatga tggtcgttgg 1739

ggtggttgtc atgtgatggg tcccctccag gttactaaag ggtgcatgtc ccctgcttga 1799

acactgaagg gcaggtggtg agccatggcc atggtcccca gctgaggagc aggtgtccct 1859

gagaacccaa acttcccaga gagtatgtga gaaccaacca atgaaaacag tcccatcgct 1919

cttacccggt aagtaaacag tcagaaaatt agcatgaaag cagtttagca ttgggaggaa 1979

gctcagatct ctagagctgt cttgtccccg cccaggattg acctgtgtaa gtcccaataa 2039

actcacctac tcatc                                                   2054
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<210> 121
<211> 108
<212> PRT
<213> Homo sapiens

<400> 121

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Met Gly Val Gln Val Glu Thr Ile Ser Pro Gly Asp Gly Arg Thr Phe
 1               5                  10                  15

Pro Lys Arg Gly Gln Thr Cys Val Val His Tyr Thr Gly Met Leu Glu
            20                  25                  30

Asp Gly Lys Lys Phe Asp Ser Ser Arg Asp Arg Asn Lys Pro Phe Lys
        35                  40                  45

Phe Met Leu Gly Lys Gln Glu Val Ile Arg Gly Trp Glu Glu Gly Val
    50                  55                  60

Ala Gln Met Ser Val Gly Gln Arg Ala Lys Leu Thr Ile Ser Pro Asp
 65                  70                  75                  80

Tyr Ala Tyr Gly Ala Thr Gly His Pro Gly Ile Ile Pro Pro His Ala
                85                  90                  95

Thr Leu Val Phe Asp Val Glu Leu Leu Lys Leu Glu
                100                 105
```

<210> 122

218

<211> 1546
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (89)..(412)

<400> 122
actaggcaga gccgtggaac cgccgccagg tcgctgttgg tccacgccgc ccgtcgcgcc 60

gcccgcccgc tcagcgtccg ccgccgcc atg gga gtg cag gtg gaa acc atc   112
                                 Met Gly Val Gln Val Glu Thr Ile
                                  1   5

tcc cca gga gac ggg cgc acc ttc ccc aag cgc ggc cag acc tgc gtg   160
Ser Pro Gly Asp Gly Arg Thr Phe Pro Lys Arg Gly Gln Thr Cys Val
     10   15   20

gtg cac tac acc ggg atg ctt gaa gat gga aag aaa ttt gat tcc tcc   208
Val His Tyr Thr Gly Met Leu Glu Asp Gly Lys Lys Phe Asp Ser Ser
 25   30   35   40

cgg gac aga aac aag ccc ttt aag ttt atg cta ggc aag cag gag gtg   256
Arg Asp Arg Asn Lys Pro Phe Lys Phe Met Leu Gly Lys Gln Glu Val
                 45   50   55

atc cga ggc tgg gaa gaa ggg gtt gcc cag atg agt gtg ggt cag aga   304
Ile Arg Gly Trp Glu Glu Gly Val Ala Gln Met Ser Val Gly Gln Arg
             60   65   70

gcc aaa ctg act ata tct cca gat tat gcc tat ggt gcc act ggg cac   352
Ala Lys Leu Thr Ile Ser Pro Asp Tyr Ala Tyr Gly Ala Thr Gly His
         75   80   85

cca ggc atc atc cca cca cat gcc act ctc gtc ttc gat gtg gag ctt   400
Pro Gly Ile Ile Pro Pro His Ala Thr Leu Val Phe Asp Val Glu Leu
     90   95   100

cta aaa ctg gaa tgacaggaat ggcctcctcc cttagctccc tgttcttgga   452
Leu Lys Leu Glu
105

tctgccatgg agggatctgg tgcctccaga catgtgcaca tgaatccata tggagctttt 512

cctgatgttc cactccactt tgtatagaca tctgccctga ctgaatgtgt tctgtcactc 572

agctttgctt ccgacacctc tgtttcctct tcccctttct cctcgtatgt gtgtttacct 632

aaactatatg ccataaacct caagttactc attttatttt gttttcattt tggggtgaag 692

attcagtttc agtcttttgg atataggttt ccaattaagt acatggtcaa gtattaacag 752

cacaagtggt aggttaacat tagaatagga attggtgttg ggggggggt ttgcaagaat 812

attttatttt aatttttggt atgaaatttt tatctattat atattaaaca ttcttgctgc 872

219

tgcgctgcaa agccatagca gatttgaggc gctgttgagg actgaattac tctccaagtt 932

gagagatgtc tttgggttaa attaaaagcc ctacctaaaa ctgaggtggg gatggggaga 992

gcctttgcct ccaccattcc cacccaccct cccCttaaac cctctgcctt tgaaagtaga 1052

tcatgttcac tgcaatgctg gacactacag gtatctgtcc ctgggccagc agggacctct 1112

gaagccttct ttgtggcctt tttttttttt tcatcctgtg gtttttctaa tggactttca 1172

ggaattttgt aatctcataa ctttccaagc tccaccactt cctaaatctt aagaactttta 1232

attgacagtt tcaattgaag gtgctgtttg tagacttaac acccagtgaa agcccagcca 1292

tcatgacaaa tccttgaatg ttctcttaag aaaatgatgc tggtcatcgc agcttcagca 1352

tctcctgttt tttgatgctt ggctccctct gctgatctca gtttcctggc ttttcctccc 1412

tcagcccctt ctcacccctt tgctgtcctg tgtagtgatt tggtgagaaa tcgttgctgc 1472

acccttcccc cagcaccatt tatgagtctc aagttttatt attgcaataa aagtgcttta 1532

tgccggcttt tctc 1546

<210> 123
<211> 679
<212> PRT
<213> Homo sapiens

<400> 123
Met Ala Thr Leu Ile Thr Ser Thr Thr Ala Ala Thr Ala Ala Ser Gly
 1   5   10   15

Pro Leu Val Asp Tyr Leu Trp Met Leu Ile Leu Gly Phe Ile Ile Ala
            20   25   30

Phe Val Leu Ala Phe Ser Val Gly Ala Asn Asp Val Ala Asn Ser Phe
        35   40   45

Gly Thr Ala Val Gly Ser Gly Val Val Thr Leu Lys Gln Ala Cys Ile
    50   55   60

Leu Ala Ser Ile Phe Glu Thr Val Gly Ser Val Leu Leu Gly Ala Lys
65   70   75   80

Val Ser Glu Thr Ile Arg Lys Gly Leu Ile Asp Val Glu Met Tyr Asn
                85   90   95

Ser Thr Gln Gly Leu Leu Met Ala Gly Ser Val Ser Ala Met Phe Gly
            100   105   110

Ser Ala Val Trp Gln Leu Val Ala Ser Phe Leu Lys Leu Pro Ile Ser
        115   120   125

Gly Thr His Cys Ile Val Gly Ala Thr Ile Gly Phe Ser Leu Val Ala
    130   135   140

220

Lys Gly Gln Glu Gly Val Lys Trp Ser Glu Leu Ile Lys Ile Val Met
145   150   155   160

Ser Trp Phe Val Ser Pro Leu Leu Ser Gly Ile Met Ser Gly Ile Leu
              165   170   175

Phe Phe Leu Val Arg Ala Phe Ile Leu His Lys Ala Asp Pro Val Pro
          180   185   190

Asn Gly Leu Arg Ala Leu Pro Val Phe Tyr Ala Cys Thr Val Gly Ile
          195   200   205

Asn Leu Phe Ser Ile Met Tyr Thr Gly Ala Pro Leu Leu Gly Phe Asp
      210   215   220

Lys Leu Pro Leu Trp Gly Thr Ile Leu Ile Ser Val Gly Cys Ala Val
225   230   235   240

Phe Cys Ala Leu Ile Val Trp Phe Phe Val Cys Pro Arg Met Lys Arg
              245   250   255

Lys Ile Glu Arg Glu Ile Lys Cys Ser Pro Ser Glu Ser Pro Leu Met
              260   265   270

Glu Lys Lys Asn Ser Leu Lys Glu Asp His Glu Glu Thr Lys Leu Ser
          275   280   285

Val Gly Asp Ile Glu Asn Lys His Pro Val Ser Glu Val Gly Pro Ala
      290   295   300

Thr Val Pro Leu Gln Ala Val Val Glu Glu Arg Thr Val Ser Phe Lys
305   310   315   320

Leu Gly Asp Leu Glu Glu Ala Pro Glu Arg Glu Arg Leu Pro Ser Val
              325   330   335

Asp Leu Lys Glu Glu Thr Ser Ile Asp Ser Thr Val Asn Gly Ala Val
          340   345   350

Gln Leu Pro Asn Gly Asn Leu Val Gln Phe Ser Gln Ala Val Ser Asn
          355   360   365

Gln Ile Asn Ser Ser Gly His Tyr Gln Tyr His Thr Val His Lys Asp
      370   375   380

Ser Gly Leu Tyr Lys Glu Leu Leu His Lys Leu His Leu Ala Lys Val
385   390   395   400

Gly Asp Cys Met Gly Asp Ser Gly Asp Lys Pro Leu Arg Arg Asn Asn
              405   410   415

Ser Tyr Thr Ser Tyr Thr Met Ala Ile Cys Gly Met Pro Leu Asp Ser
          420   425   430

Phe Arg Ala Lys Glu Gly Glu Gln Lys Gly Glu Glu Met Glu Lys Leu
          435   440   445

221

Thr Trp Pro Asn Ala Asp Ser Lys Lys Arg Ile Arg Met Asp Ser Tyr
    450   455   460

Thr Ser Tyr Cys Asn Ala Val Ser Asp Leu His Ser Ala Ser Glu Ile
465   470   475   480

Asp Met Ser Val Lys Ala Glu Met Gly Leu Gly Asp Arg Lys Gly Ser
            485   490   495

Asn Gly Ser Leu Glu Glu Trp Tyr Asp Gln Asp Lys Pro Glu Val Ser
            500   505   510

Leu Leu Phe Gln Phe Leu Gln Ile Leu Thr Ala Cys Phe Gly Ser Phe
        515   520   525

Ala His Gly Gly Asn Asp Val Ser Asn Ala Ile Gly Pro Leu Val Ala
    530   535   540

Leu Tyr Leu Val Tyr Asp Thr Gly Asp Val Ser Ser Lys Val Ala Thr
545   550   555   560

Pro Ile Trp Leu Leu Leu Tyr Gly Gly Val Gly Ile Cys Val Gly Leu
            565   570   575

Trp Val Trp Gly Arg Arg Val Ile Gln Thr Met Gly Lys Asp Leu Thr
            580   585   590

Pro Ile Thr Pro Ser Ser Gly Phe Ser Ile Glu Leu Ala Ser Ala Leu
    595   600   .   605

Thr Val Val Ile Ala Ser Asn Ile Gly Leu Pro Ile Ser Thr Thr His
    610   615   620

Cys Lys Val Gly Ser Val Val Ser Val Gly Trp Leu Arg Ser Lys Lys
625   630   635   640

Ala Val Asp Trp Arg Leu Phe Arg Asn Ile Phe Met Ala Trp Phe Val
            645   650   655

Thr Val Pro Ile Ser Gly Val Ile Ser Ala Ala Ile Met Ala Ile Phe
            660   665   670

Arg Tyr Val Ile Leu Arg Met
        675

<210> 124
<211> 2916
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (81)..(2117)

<400> 124

222

```
tttttgatac ctcatattct gtttacacat cttgaaaggc gctcagtagt tctcttacta 60

aacaaccact actccagaga atg gca acg ctg att acc agt act aca gct gct 113
                       Met Ala Thr Leu Ile Thr Ser Thr Thr Ala Ala
                        1               5                   10

acc gcc gct tct ggt cct ttg gtg gac tac cta tgg atg ctc atc ctg   161
Thr Ala Ala Ser Gly Pro Leu Val Asp Tyr Leu Trp Met Leu Ile Leu
             15                  20                  25

ggc ttc att att gca ttt gtc ttg gca ttc tcc gtg gga gcc aat gat   209
Gly Phe Ile Ile Ala Phe Val Leu Ala Phe Ser Val Gly Ala Asn Asp
             30                  35                  40

gta gca aat tct ttt ggt aca gct gtg ggc tca ggt gta gtg acc ctg   257
Val Ala Asn Ser Phe Gly Thr Ala Val Gly Ser Gly Val Val Thr Leu
         45                  50                  55

aag caa gcc tgc atc cta gct agc atc ttt gaa aca gtg ggc tct gtc   305
Lys Gln Ala Cys Ile Leu Ala Ser Ile Phe Glu Thr Val Gly Ser Val
 60                  65                  70                  75

tta ctg ggg gcc aaa gtg agc gaa acc atc cgg aag ggc ttg att gac   353
Leu Leu Gly Ala Lys Val Ser Glu Thr Ile Arg Lys Gly Leu Ile Asp
                 80                  85                  90

gtg gag atg tac aac tcg act caa ggg ctg ctg atg gcc ggc tca gtc   401
Val Glu Met Tyr Asn Ser Thr Gln Gly Leu Leu Met Ala Gly Ser Val
             95                  100                 105

agt gct atg ttt ggt tct gct gtg tgg caa ctc gtg gct tcg ttt ttg   449
Ser Ala Met Phe Gly Ser Ala Val Trp Gln Leu Val Ala Ser Phe Leu
             110                 115                 120

aag ctc cct att tct gga acc cat tgt att gtt ggt gca act att ggt   497
Lys Leu Pro Ile Ser Gly Thr His Cys Ile Val Gly Ala Thr Ile Gly
         125                 130                 135

ttc tcc ctc gtg gca aag ggg cag gag ggt gtc aag tgg tct gaa ctg   545
Phe Ser Leu Val Ala Lys Gly Gln Glu Gly Val Lys Trp Ser Glu Leu
140                 145                 150                 155

ata aaa att gtg atg tct tgg ttc gtg tcc cca ctg ctt tct gga att   593
Ile Lys Ile Val Met Ser Trp Phe Val Ser Pro Leu Leu Ser Gly Ile
                 160                 165                 170

atg tct gga att tta ttc ttc ctg gtt cgt gca ttc atc ctc cat aag   641
Met Ser Gly Ile Leu Phe Phe Leu Val Arg Ala Phe Ile Leu His Lys
             175                 180                 185

gca gat cca gtt cct aat ggt ttg cga gct ttg cca gtt ttc tat gcc   689
Ala Asp Pro Val Pro Asn Gly Leu Arg Ala Leu Pro Val Phe Tyr Ala
             190                 195                 200

tgc aca gtt gga ata aac ctc ttt tcc atc atg tat act gga gca ccg   737
Cys Thr Val Gly Ile Asn Leu Phe Ser Ile Met Tyr Thr Gly Ala Pro
 205                 210                 215
```

223

```
ttg ctg ggc ttt gac aaa ctt cct ctg tgg ggt acc atc ctc atc tcg      785
Leu Leu Gly Phe Asp Lys Leu Pro Leu Trp Gly Thr Ile Leu Ile Ser
220                 225                 230                 235

gtg gga tgt gca gtt ttc tgt gcc ctt atc gtc tgg ttc ttt gta tgt      833
Val Gly Cys Ala Val Phe Cys Ala Leu Ile Val Trp Phe Phe Val Cys
                    240                 245                 250

ccc agg atg aag aga aaa att gaa cga gaa ata aag tgt agt cct tct      881
Pro Arg Met Lys Arg Lys Ile Glu Arg Glu Ile Lys Cys Ser Pro Ser
                255                 260                 265

gaa agc ccc tta atg gaa aaa aag aat agc ttg aaa gaa gac cat gaa      929
Glu Ser Pro Leu Met Glu Lys Lys Asn Ser Leu Lys Glu Asp His Glu
                270                 275                 280

gaa aca aag ttg tct gtt ggt gat att gaa aac aag cat cct gtt tct      977
Glu Thr Lys Leu Ser Val Gly Asp Ile Glu Asn Lys His Pro Val Ser
            285                 290                 295

gag gta ggg cct gcc act gtg ccc ctc cag gct gtg gtg gag gag aga     1025
Glu Val Gly Pro Ala Thr Val Pro Leu Gln Ala Val Val Glu Glu Arg
300                 305                 310                 315

aca gtc tca ttc aaa ctt gga gat ttg gag gaa gct cca gag aga gag     1073
Thr Val Ser Phe Lys Leu Gly Asp Leu Glu Glu Ala Pro Glu Arg Glu
                320                 325                 330

agg ctt ccc agc gtg gac ttg aaa gag gaa acc agc ata gat agc acc     1121
Arg Leu Pro Ser Val Asp Leu Lys Glu Glu Thr Ser Ile Asp Ser Thr
                335                 340                 345

gtg aat ggt gca gtg cag ttg cct aat ggg aac ctt gtc cag ttc agt     1169
Val Asn Gly Ala Val Gln Leu Pro Asn Gly Asn Leu Val Gln Phe Ser
            350                 355                 360

caa gcc gtc agc aac caa ata aac tcc agt ggc cac tac cag tat cac     1217
Gln Ala Val Ser Asn Gln Ile Asn Ser Ser Gly His Tyr Gln Tyr His
            365                 370                 375

acc gtg cat aag gat tcc ggc ctg tac aaa gag cta ctc cat aaa tta     1265
Thr Val His Lys Asp Ser Gly Leu Tyr Lys Glu Leu Leu His Lys Leu
380                 385                 390                 395

cat ctt gcc aag gtg gga gat tgc atg gga gac tcc ggt gac aaa ccc     1313
His Leu Ala Lys Val Gly Asp Cys Met Gly Asp Ser Gly Asp Lys Pro
                400                 405                 410

tta agg cgc aat aat agc tat act tcc tat acc atg gca ata tgt ggc     1361
Leu Arg Arg Asn Asn Ser Tyr Thr Ser Tyr Thr Met Ala Ile Cys Gly
                415                 420                 425

atg cct ctg gat tca ttc cgt gcc aaa gaa ggt gaa cag aag ggc gaa     1409
Met Pro Leu Asp Ser Phe Arg Ala Lys Glu Gly Glu Gln Lys Gly Glu
                430                 435                 440
```

224

```
gaa atg gag aag ctg aca tgg cct aat gca gac tcc aag aag cga att    1457
Glu Met Glu Lys Leu Thr Trp Pro Asn Ala Asp Ser Lys Lys Arg Ile
    445                 450                 455

cga atg gac agt tac acc agt tac tgc aat gct gtg tct gac ctt cac    1505
Arg Met Asp Ser Tyr Thr Ser Tyr Cys Asn Ala Val Ser Asp Leu His
460                 465                 470                 475

tca gca tct gag ata gac atg agt gtc aag gca gag atg ggt cta ggt    1553
Ser Ala Ser Glu Ile Asp Met Ser Val Lys Ala Glu Met Gly Leu Gly
                480                 485                 490

gac aga aaa gga agt aat ggc tct cta gaa gaa tgg tat gac cag gat    1601
Asp Arg Lys Gly Ser Asn Gly Ser Leu Glu Glu Trp Tyr Asp Gln Asp
                495                 500                 505

aag cct gaa gtc tct ctc ctc ttc cag ttc ctg cag atc ctt aca gcc    1649
Lys Pro Glu Val Ser Leu Leu Phe Gln Phe Leu Gln Ile Leu Thr Ala
            510                 515                 520

tgc ttt ggg tca ttc gcc cat ggt ggc aat gac gta agc aat gcc att    1697
Cys Phe Gly Ser Phe Ala His Gly Gly Asn Asp Val Ser Asn Ala Ile
            525                 530                 535

ggg cct ctg gtt gct tta tat ttg gtt tat gac aca gga gat gtt tct    1745
Gly Pro Leu Val Ala Leu Tyr Leu Val Tyr Asp Thr Gly Asp Val Ser
540                 545                 550                 555

tca aaa gtg gca aca cca ata tgg ctt cta ctc tat ggt ggt gtt ggt    1793
Ser Lys Val Ala Thr Pro Ile Trp Leu Leu Leu Tyr Gly Gly Val Gly
                560                 565                 570

atc tgt gtt ggt ctg tgg gtt tgg gga aga aga gtt atc cag acc atg    1841
Ile Cys Val Gly Leu Trp Val Trp Gly Arg Arg Val Ile Gln Thr Met
                575                 580                 585

ggg aag gat ctg aca ccg atc aca ccc tct agt ggc ttc agt att gaa    1889
Gly Lys Asp Leu Thr Pro Ile Thr Pro Ser Ser Gly Phe Ser Ile Glu
                590                 595                 600

ctg gca tct gcc ctc act gtg gtg att gca tca aat att ggc ctt ccc    1937
Leu Ala Ser Ala Leu Thr Val Val Ile Ala Ser Asn Ile Gly Leu Pro
            605                 610                 615

atc agt aca aca cat tgt aaa gtg ggc tct gtt gtg tct gtt ggc tgg    1985
Ile Ser Thr Thr His Cys Lys Val Gly Ser Val Val Ser Val Gly Trp
620                 625                 630                 635

ctc cgg tcc aag aag gct gtt gac tgg cgt ctc ttt cgt aac att ttt    2033
Leu Arg Ser Lys Lys Ala Val Asp Trp Arg Leu Phe Arg Asn Ile Phe
                640                 645                 650

atg gcc tgg ttt gtc aca gtc cct att tct gga gtt atc agt gct gcc    2081
Met Ala Trp Phe Val Thr Val Pro Ile Ser Gly Val Ile Ser Ala Ala
                655                 660                 665

atc atg gca atc ttc aga tat gtc atc ctc aga atg tgaagctgtt         2127
Ile Met Ala Ile Phe Arg Tyr Val Ile Leu Arg Met
```

225

```
Ile Met Ala Ile Phe Arg Tyr Val Ile Leu Arg Met
        670                 675

tgagattaaa atttgtgtca atgtttggga ccatcttagg tattcctgct cccctgaaga 2187

atgattacag tgttaacaga agactgacaa gagtcttttt atttgggagc cagaggaggg 2247

aagtgttact tgtgctataa ctgcttttgt gctaaatatg aattgtctca aaattagctg 2307

tgtaaaatag cccgggttcc actggctcct gctgaggtcc cctttccttc tgggctgtga 2367

attcctgtac atatttctct acttttgta tcaggcttca attccattat gttttaatgt 2427

tgtctctgaa gatgacttgt gatttttttt tctttttttt aaaccatgaa gagccgtttg 2487

acagagcatg ctctgcgttg ttggtttcac cagcttctgc cctcacatgc acagggattt 2547

aacaacaaaa atataactac aacttccctt gtagtctctt atataagtag agtccttggt 2607

actctgccct cctgtcagta gtggcaggat ctattggcat attcgggagc ttcttagagg 2667

gatgaggttc tttgaacaca gtgaaaattt aaattagtaa ctttttttgca agcagtttat 2727

tgactgttat tgctaagaag aagtaagaaa gaaaaagcct gttggcaatc ttggttattt 2787

ctttaagatt tctggcagtg tgggatggat gaatgaagtg gaatgtgaac tttgggcaag 2847

ttaaatggga cagccttcca tgttcatttg tctacctctt aactgaataa aaaagcctac 2907

agtttttag                                                        2916


<210> 125
<211> 288
<212> PRT
<213> Homo sapiens

<400> 125
Met Glu Arg Pro Gln Pro Asp Ser Met Pro Gln Asp Leu Ser Glu Ala
  1               5                  10                  15

Leu Lys Glu Ala Thr Lys Glu Val His Thr Gln Ala Glu Asn Ala Glu
                 20                  25                  30

Phe Met Arg Asn Phe Gln Lys Gly Gln Val Thr Arg Asp Gly Phe Lys
         35                  40                  45

Leu Val Met Ala Ser Leu Tyr His Ile Tyr Val Ala Leu Glu Glu Glu
    50                  55                  60

Ile Glu Arg Asn Lys Glu Ser Pro Val Phe Ala Pro Val Tyr Phe Pro
 65                  70                  75                  80

Glu Glu Leu His Arg Lys Ala Ala Leu Glu Gln Asp Leu Ala Phe Trp
                 85                  90                  95

Tyr Gly Pro Arg Trp Gln Glu Val Ile Pro Tyr Thr Pro Ala Met Gln
```

226

```
              100                    105                    110
Arg Tyr Val Lys Arg Leu His Glu Val Gly Arg Thr Glu Pro Glu Leu
        115                    120                    125

Leu Val Ala His Ala Tyr Thr Arg Tyr Leu Gly Asp Leu Ser Gly Gly
    130                    135                    140

Gln Val Leu Lys Lys Ile Ala Gln Lys Ala Leu Asp Leu Pro Ser Ser
145                    150                    155                    160

Gly Glu Gly Leu Ala Phe Phe Thr Phe Pro Asn Ile Ala Ser Ala Thr
                165                    170                    175

Lys Phe Lys Gln Leu Tyr Arg Ser Arg Met Asn Ser Leu Glu Met Thr
                180                    185                    190

Pro Ala Val Arg Gln Arg Val Ile Glu Glu Ala Lys Thr Ala Phe Leu
        195                    200                    205

Leu Asn Ile Gln Leu Phe Glu Glu Leu Gln Glu Leu Leu Thr His Asp
    210                    215                    220

Thr Lys Asp Gln Ser Pro Ser Arg Ala Pro Gly Leu Arg Gln Arg Ala
225                    230                    235                    240

Ser Asn Lys Val Gln Asp Ser Ala Pro Val Glu Thr Pro Arg Gly Lys
                245                    250                    255

Pro Pro Leu Asn Thr Arg Ser Gln Ala Pro Leu Leu Arg Trp Val Leu
            260                    265                    270

Thr Leu Ser Phe Leu Val Ala Thr Val Ala Val Gly Leu Tyr Ala Met
        275                    280                    285
```

<210> 126
<211> 1550
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (81)..(944)

<400> 126

```
tcaacgcctg cctcccctcg agcgtcctca gcgcagccgc cgcccgcgga gccagcacga 60

acgagcccag caccggccgg atg gag cgt ccg caa ccc gac agc atg ccc cag 113
                      Met Glu Arg Pro Gln Pro Asp Ser Met Pro Gln
                       1               5                  10

gat ttg tca gag gcc ctg aag gag gcc acc aag gag gtg cac acc cag   161
Asp Leu Ser Glu Ala Leu Lys Glu Ala Thr Lys Glu Val His Thr Gln
         15                  20                  25

gca gag aat gct gag ttc atg agg aac ttt cag aag ggc cag gtg acc   209
```

227

```
Ala Glu Asn Ala Glu Phe Met Arg Asn Phe Gln Lys Gly Gln Val Thr
        30                  35              40
```

```
cga gac ggc ttc aag ctg gtg atg gcc tcc ctg tac cac atc tat gtg   257
Arg Asp Gly Phe Lys Leu Val Met Ala Ser Leu Tyr His Ile Tyr Val
        45                  50              55
```

```
gcc ctg gag gag gag att gag cgc aac aag gag agc cca gtc ttc gcc   305
Ala Leu Glu Glu Glu Ile Glu Arg Asn Lys Glu Ser Pro Val Phe Ala
 60                  65              70                  75
```

```
cct gtc tac ttc cca gaa gag ctg cac cgc aag gct gcc ctg gag cag   353
Pro Val Tyr Phe Pro Glu Glu Leu His Arg Lys Ala Ala Leu Glu Gln
                80              85                  90
```

```
gac ctg gcc ttc tgg tac ggg ccc cgc tgg cag gag gtc atc ccc tac   401
Asp Leu Ala Phe Trp Tyr Gly Pro Arg Trp Gln Glu Val Ile Pro Tyr
                95              100             105
```

```
aca cca gcc atg cag cgc tat gtg aag cgg ctc cac gag gtg ggg cgc   449
Thr Pro Ala Met Gln Arg Tyr Val Lys Arg Leu His Glu Val Gly Arg
            110             115             120
```

```
aca gag ccc gag ctg ctg gtg gcc cac gcc tac acc cgc tac ctg ggt   497
Thr Glu Pro Glu Leu Leu Val Ala His Ala Tyr Thr Arg Tyr Leu Gly
        125             130             135
```

```
gac ctg tct ggg ggc cag gtg ctc aaa aag att gcc cag aaa gcc ctg   545
Asp Leu Ser Gly Gly Gln Val Leu Lys Lys Ile Ala Gln Lys Ala Leu
140                 145             150                 155
```

```
gac ctg ccc agc tct ggc gag ggc ctg gcc ttc ttc acc ttc ccc aac   593
Asp Leu Pro Ser Ser Gly Glu Gly Leu Ala Phe Phe Thr Phe Pro Asn
                160                 165                 170
```

```
att gcc agt gcc acc aag ttc aag cag ctc tac cgc tcc cgc atg aac   641
Ile Ala Ser Ala Thr Lys Phe Lys Gln Leu Tyr Arg Ser Arg Met Asn
                175                 180             185
```

```
tcc ctg gag atg act ccc gca gtc agg cag agg gtg ata gaa gag gcc   689
Ser Leu Glu Met Thr Pro Ala Val Arg Gln Arg Val Ile Glu Glu Ala
            190                 195             200
```

```
aag act gcg ttc ctg ctc aac atc cag ctc ttt gag gag ttg cag gag   737
Lys Thr Ala Phe Leu Leu Asn Ile Gln Leu Phe Glu Glu Leu Gln Glu
        205                 210             215
```

```
ctg ctg acc cat gac acc aag gac cag agc ccc tca cgg gca cca ggg   785
Leu Leu Thr His Asp Thr Lys Asp Gln Ser Pro Ser Arg Ala Pro Gly
220                 225             230                 235
```

```
ctt cgc cag cgg gcc agc aac aaa gtg caa gat tct gcc ccc gtg gag   833
Leu Arg Gln Arg Ala Ser Asn Lys Val Gln Asp Ser Ala Pro Val Glu
                240             245             250
```

```
act ccc aga ggg aag ccc cca ctc aac acc cgc tcc cag gct ccg ctt   881
Thr Pro Arg Gly Lys Pro Pro Leu Asn Thr Arg Ser Gln Ala Pro Leu
```

228

```
              255                    260                    265
ctc cga tgg gtc ctt aca ctc agc ttt ctg gtg gcg aca gtt gct gta    929
Leu Arg Trp Val Leu Thr Leu Ser Phe Leu Val Ala Thr Val Ala Val
        270                    275                    280

ggg ctt tat gcc atg tgaatgcagg catgctggct cccagggcca tgaactttgt   984
Gly Leu Tyr Ala Met
    285

ccggtggaag gccttctttc tagagaggga attctcttgg ctggcttcct taccgtgggc   1044

actgaaggct ttcagggcct ccagccctct cactgtgtcc ctctctctgg aaaggaggaa   1104

ggagcctatg gcatcttccc caacgaaaag cacatccagg caatggccta aacttcagag   1164

ggggcgaagg ggtcagccct gcccttcagc atcctcagtt cctgcagcag agcctggaag   1224

acaccctaat gtggcagctg tctcaaacct ccaaaagccc tgagtttcaa gtatccttgt   1284

tgacacggcc atgaccactt tccccgtggg ccatggcaat ttttacacaa acctgaaaag   1344

atgttgtgtc ttgtgttttt gtcttatttt tgttggagcc actctgttcc tggctcagcc   1404

tcaaatgcag tatttttgtt gtgttctgtt gtttttatag cagggttggg gtggtttttg   1464

agccatgcgt gggtggggag ggaggtgttt aacggcactg tggccttggt ctaacttttg   1524

tgtgaaataa taaacaacat tgtctg                                        1550
```

<210> 127
<211> 135
<212> PRT
<213> Homo sapiens

<400> 127

```
Met Ala Cys Gly Leu Val Ala Ser Asn Leu Asn Leu Lys Pro Gly Glu
 1               5                  10                  15

Cys Leu Arg Val Arg Gly Glu Val Ala Pro Asp Ala Lys Ser Phe Val
            20                  25                  30

Leu Asn Leu Gly Lys Asp Ser Asn Asn Leu Cys Leu His Phe Asn Pro
        35                  40                  45

Arg Phe Asn Ala His Gly Asp Ala Asn Thr Ile Val Cys Asn Ser Lys
    50                  55                  60

Asp Gly Gly Ala Trp Gly Thr Glu Gln Arg Glu Ala Val Phe Pro Phe
 65                  70                  75                  80

Gln Pro Gly Ser Val Ala Glu Val Cys Ile Thr Phe Asp Gln Ala Asn
                85                  90                  95

Leu Thr Val Lys Leu Pro Asp Gly Tyr Glu Phe Lys Phe Pro Asn Arg
            100                 105                 110
```

229

```
Leu Asn Leu Glu Ala Ile Asn Tyr Met Ala Ala Asp Gly Asp Phe Lys
        115                 120             125

Ile Lys Cys Val Ala Phe Asp
    130             135
```

<210> 128
<211> 507
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (50)..(454)

<400> 128

```
cttctgacag ctggtgcgcc tgcccgggaa catcctcctg gactcaatc atg gct tgt   58
                                                        Met Ala Cys
                                                          1

ggt ctg gtc gcc agc aac ctg aat ctc aaa cct gga gag tgc ctt cga   106
Gly Leu Val Ala Ser Asn Leu Asn Leu Lys Pro Gly Glu Cys Leu Arg
      5                   10                  15

gtg cga ggc gag gtg gct cct gac gct aag agc ttc gtg ctg aac ctg   154
Val Arg Gly Glu Val Ala Pro Asp Ala Lys Ser Phe Val Leu Asn Leu
 20                  25                  30                  35

ggc aaa gac agc aac aac ctg tgc ctg cac ttc aac cct cgc ttc aac   202
Gly Lys Asp Ser Asn Asn Leu Cys Leu His Phe Asn Pro Arg Phe Asn
                40                  45                  50

gcc cac ggc gac gcc aac acc atc gtg tgc aac agc aag gac ggc ggg   250
Ala His Gly Asp Ala Asn Thr Ile Val Cys Asn Ser Lys Asp Gly Gly
                55                  60                  65

gcc tgg ggg acc gag cag cgg gag gct gtc ttt ccc ttc cag cct gga   298
Ala Trp Gly Thr Glu Gln Arg Glu Ala Val Phe Pro Phe Gln Pro Gly
            70                  75                  80

agt gtt gca gag gtg tgc atc acc ttc gac cag gcc aac ctg acc gtc   346
Ser Val Ala Glu Val Cys Ile Thr Phe Asp Gln Ala Asn Leu Thr Val
        85                  90                  95

aag ctg cca gat gga tac gaa ttc aag ttc ccc aac cgc ctc aac ctg   394
Lys Leu Pro Asp Gly Tyr Glu Phe Lys Phe Pro Asn Arg Leu Asn Leu
100                 105                 110                 115

gag gcc atc aac tac atg gca gct gac ggt gac ttc aag atc aaa tgt   442
Glu Ala Ile Asn Tyr Met Ala Ala Asp Gly Asp Phe Lys Ile Lys Cys
                120                 125                 130

gtg gcc ttt gac tgaaatcagc cagcccatgg cccccaataa aggcagctgc   494
Val Ala Phe Asp
            135
```

230

ctctgctccc ctg   507

<210> 129
<211> 662
<212> PRT
<213> Homo sapiens

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Met Asn Lys Glu Ile Pro Asn Gly Asn Thr Ser Glu Leu Ile Phe Asn
 1   5   10   15

Ala Val His Val Lys Asp Ala Gly Phe Tyr Val Cys Arg Val Asn Asn
            20   25   30

Asn Phe Thr Phe Glu Phe Ser Gln Trp Ser Gln Leu Asp Val Cys Asp
        35   40   45

Ile Pro Glu Ser Phe Gln Arg Ser Val Asp Gly Val Ser Glu Ser Lys
    50   55   60

Leu Gln Ile Cys Val Glu Pro Thr Ser Gln Lys Leu Met Pro Gly Ser
 65   70   75   80

Thr Leu Val Leu Gln Cys Val Ala Val Gly Ser Pro Ile Pro His Tyr
                85   90   95

Gln Trp Phe Lys Asn Glu Leu Pro Leu Thr His Glu Thr Lys Lys Leu
            100   105   110

Tyr Met Val Pro Tyr Val Asp Leu Glu His Gln Gly Thr Tyr Trp Cys
        115   120   125

His Val Tyr Asn Asp Arg Asp Ser Gln Asp Ser Lys Lys Val Glu Ile
    130   135   140

Ile Ile Gly Arg Thr Asp Glu Ala Val Glu Cys Thr Glu Asp Glu Leu
145   150   155   160

Asn Asn Leu Gly His Pro Asp Asn Lys Glu Gln Thr Thr Asp Gln Pro
            165   170   175

Leu Ala Lys Asp Lys Val Ala Leu Leu Ile Gly Asn Met Asn Tyr Arg
            180   185   190

Glu His Pro Lys Leu Lys Ala Pro Leu Val Asp Val Tyr Glu Leu Thr
            195   200   205

Asn Leu Leu Arg Gln Leu Asp Phe Lys Val Val Ser Leu Leu Asp Leu
    210   215   220

Thr Glu Tyr Glu Met Arg Asn Ala Val Asp Glu Phe Leu Leu Leu Leu
225   230   235   240

Asp Lys Gly Val Tyr Gly Leu Leu Tyr Tyr Ala Gly His Gly Tyr Glu
            245   250   255

231

Asn Phe Gly Asn Ser Phe Met Val Pro Val Asp Ala Pro Asn Pro Tyr
        260   265   270

Arg Ser Glu Asn Cys Leu Cys Val Gln Asn Ile Leu Lys Leu Met Gln
        275   280   285

Glu Lys Glu Thr Gly Leu Asn Val Phe Leu Leu Asp Met Cys Arg Lys
     290   295   300

Arg Asn Asp Tyr Asp Asp Thr Ile Pro Ile Leu Asp Ala Leu Lys Val
305   310   315   320

Thr Ala Asn Ile Val Phe Gly Tyr Ala Thr Cys Gln Gly Ala Glu Ala
            325   330   335

Phe Glu Ile Gln His Ser Gly Leu Ala Asn Gly Ile Phe Met Lys Phe
            340   345   350

Leu Lys Asp Arg Leu Leu Glu Asp Lys Lys Ile Thr Val Leu Leu Asp
        355   360   365

Glu Val Ala Glu Asp Met Gly Lys Cys His Leu Thr Lys Gly Lys Gln
     370   375   380

Ala Leu Glu Ile Arg Ser Ser Leu Ser Glu Lys Arg Ala Leu Thr Asp
385   390   395   400

Pro Ile Gln Gly Thr Glu Tyr Ser Ala Glu Ser Leu Val Arg Asn Leu
            405   410   415

Gln Trp Ala Lys Ala His Glu Leu Pro Glu Ser Met Cys Leu Lys Phe
        420   425   430

Asp Cys Gly Val Gln Ile Gln Leu Gly Phe Ala Ala Glu Phe Ser Asn
        435   440   445

Val Met Ile Ile Tyr Thr Ser Ile Val Tyr Lys Pro Pro Glu Ile Ile
     450   455   460

Met Cys Asp Ala Tyr Val Thr Asp Phe Pro Leu Asp Leu Asp Ile Asp
465   470   475   480

Pro Lys Asp Ala Asn Lys Gly Thr Pro Glu Glu Thr Gly Ser Tyr Leu
        485   490   495

Val Ser Lys Asp Leu Pro Lys His Cys Leu Tyr Thr Arg Leu Ser Ser
        500   505   510

Leu Gln Lys Leu Lys Glu His Leu Val Phe Thr Val Cys Leu Ser Tyr
        515   520   525

Gln Tyr Ser Gly Leu Glu Asp Thr Val Glu Asp Lys Gln Glu Val Asn
        530   535   540

Val Gly Lys Pro Leu Ile Ala Lys Leu Asp Met His Arg Gly Leu Gly
545   550   555   560

```
Arg Lys Thr Cys Phe Gln Thr Cys Leu Met Ser Asn Gly Pro Tyr Gln
                565                  570              575

Ser Ser Ala Ala Thr Ser Gly Gly Ala Gly His Tyr His Ser Leu Gln
                580              585              590

Asp Pro Phe His Gly Val Tyr His Ser His Pro Gly Asn Pro Ser Asn
            595              600              605

Val Thr Pro Ala Asp Ser Cys His Cys Ser Arg Thr Pro Asp Ala Phe
    610                  615                  620

Ile Ser Ser Phe Ala His His Ala Ser Cys His Phe Ser Arg Ser Asn
625              630                  635                  640

Val Pro Val Glu Thr Thr Asp Glu Ile Pro Phe Ser Phe Ser Asp Arg
                645              650              655

Leu Arg Ile Ser Glu Lys
                660


<210> 130
<211> 2251
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (74)..(2059)

<400> 130
cttggctgga cagtttgtga aactgtgttg ccgggcaact ggacatcctt ttgttcaata 60

tcagtggttc aaa atg aat aaa gag att cca aat gga aat aca tca gag     109
            Met Asn Lys Glu Ile Pro Asn Gly Asn Thr Ser Glu
            1                5                  10

ctt att ttt aat gca gtg cat gta aaa gat gca ggc ttt tat gtc tgt  157
Leu Ile Phe Asn Ala Val His Val Lys Asp Ala Gly Phe Tyr Val Cys
        15                  20                  25

cga gtt aat aac aat ttc acc ttt gaa ttc agc cag tgg tca cag ctg  205
Arg Val Asn Asn Asn Phe Thr Phe Glu Phe Ser Gln Trp Ser Gln Leu
    30                  35                  40

gat gtt tgc gac atc cca gag agc ttc cag aga agt gtt gat ggc gtc  253
Asp Val Cys Asp Ile Pro Glu Ser Phe Gln Arg Ser Val Asp Gly Val
45                  50                  55                  60

tct gaa tcc aag ttg caa atc tgt gtt gaa cca act tcc caa aag ctg  301
Ser Glu Ser Lys Leu Gln Ile Cys Val Glu Pro Thr Ser Gln Lys Leu
                65                  70                  75

atg cca ggc agc aca ttg gtt tta cag tgt gtt gct gtt gga agc cct  349
Met Pro Gly Ser Thr Leu Val Leu Gln Cys Val Ala Val Gly Ser Pro
```

233

```
                80                      85                      90

att cct cac tac cag tgg ttc aaa aat gaa tta cca tta aca cat gag   397
Ile Pro His Tyr Gln Trp Phe Lys Asn Glu Leu Pro Leu Thr His Glu
        95                      100                     105

acc aaa aag cta tac atg gtg cct tat gtg gat ttg gaa cac caa gga   445
Thr Lys Lys Leu Tyr Met Val Pro Tyr Val Asp Leu Glu His Gln Gly
        110                     115                     120

acc tac tgg tgt cat gta tat aat gat cga gac agt caa gat agc aag   493
Thr Tyr Trp Cys His Val Tyr Asn Asp Arg Asp Ser Gln Asp Ser Lys
125                     130                     135                 140

aag gta gaa atc atc ata gga aga aca gat gag gca gtg gag tgc act   541
Lys Val Glu Ile Ile Ile Gly Arg Thr Asp Glu Ala Val Glu Cys Thr
                145                     150                     155

gaa gat gaa tta aat aat ctt ggt cat cct gat aat aaa gag caa aca   589
Glu Asp Glu Leu Asn Asn Leu Gly His Pro Asp Asn Lys Glu Gln Thr
                160                     165                     170

act gac cag cct ttg gcg aag gac aag gtt gcc ctt ttg ata gga aat   637
Thr Asp Gln Pro Leu Ala Lys Asp Lys Val Ala Leu Leu Ile Gly Asn
                175                     180                     185

atg aat tac cgg gag cac ccc aag ctc aaa gct cct ttg gtg gat gtg   685
Met Asn Tyr Arg Glu His Pro Lys Leu Lys Ala Pro Leu Val Asp Val
        190                     195                     200

tac gaa ttg act aac tta ctg aga cag ctg gac ttc aaa gtg gtt tca   733
Tyr Glu Leu Thr Asn Leu Leu Arg Gln Leu Asp Phe Lys Val Val Ser
205                     210                     215                 220

ctg ttg gat ctt act gaa tat gag atg cgt aat gct gtg gat gag ttt   781
Leu Leu Asp Leu Thr Glu Tyr Glu Met Arg Asn Ala Val Asp Glu Phe
                225                     230                     235

tta ctc ctt tta gac aag gga gta tat ggg tta tta tat tat gca gga   829
Leu Leu Leu Leu Asp Lys Gly Val Tyr Gly Leu Leu Tyr Tyr Ala Gly
                240                     245                     250

cat ggt tat gaa aat ttt ggg aac agc ttc atg gtc ccc gtt gat gct   877
His Gly Tyr Glu Asn Phe Gly Asn Ser Phe Met Val Pro Val Asp Ala
        255                     260                     265

cca aat cca tat agg tct gaa aat tgt ctg tgt gta caa aat ata ctg   925
Pro Asn Pro Tyr Arg Ser Glu Asn Cys Leu Cys Val Gln Asn Ile Leu
        270                     275                     280

aaa ttg atg caa gaa aaa gaa act gga ctt aat gtg ttc tta ttg gat   973
Lys Leu Met Gln Glu Lys Glu Thr Gly Leu Asn Val Phe Leu Leu Asp
285                     290                     295                 300

atg tgt agg aaa aga aat gac tac gat gat acc att cca atc ttg gat   1021
Met Cys Arg Lys Arg Asn Asp Tyr Asp Asp Thr Ile Pro Ile Leu Asp
                305                     310                     315
```

234

```
gca cta aaa gtc acc gcc aat att gtg ttt gga tat gcc acg tgt caa    1069
Ala Leu Lys Val Thr Ala Asn Ile Val Phe Gly Tyr Ala Thr Cys Gln
        320             325             330

gga gca gaa gct ttt gaa atc cag cat tct gga ttg gca aat gga atc    1117
Gly Ala Glu Ala Phe Glu Ile Gln His Ser Gly Leu Ala Asn Gly Ile
        335             340             345

ttt atg aaa ttt tta aaa gac aga tta tta gaa gat aag aaa atc act    1165
Phe Met Lys Phe Leu Lys Asp Arg Leu Leu Glu Asp Lys Lys Ile Thr
        350             355             360

gtg tta ctg gat gaa gtt gca gaa gat atg ggt aag tgt cac ctt acc    1213
Val Leu Leu Asp Glu Val Ala Glu Asp Met Gly Lys Cys His Leu Thr
365             370             375             380

aaa ggc aaa cag gct cta gag att cga agt agt tta tct gag aag aga    1261
Lys Gly Lys Gln Ala Leu Glu Ile Arg Ser Ser Leu Ser Glu Lys Arg
                385             390             395

gca ctt act gat cca ata cag gga aca gaa tat tct gct gaa tct ctt    1309
Ala Leu Thr Asp Pro Ile Gln Gly Thr Glu Tyr Ser Ala Glu Ser Leu
                400             405             410

gtg cgg aat cta cag tgg gcc aag gct cat gaa ctt cca gaa agt atg    1357
Val Arg Asn Leu Gln Trp Ala Lys Ala His Glu Leu Pro Glu Ser Met
            415             420             425

tgt ctt aag ttt gac tgt ggt gtt cag att caa tta gga ttt gca gct    1405
Cys Leu Lys Phe Asp Cys Gly Val Gln Ile Gln Leu Gly Phe Ala Ala
        430             435             440

gag ttt tcc aat gtc atg atc atc tat aca agt ata gtt tac aaa cca    1453
Glu Phe Ser Asn Val Met Ile Ile Tyr Thr Ser Ile Val Tyr Lys Pro
445             450             455             460

ccg gag ata ata atg tgt gat gcc tac gtt act gat ttt cca ctt gat    1501
Pro Glu Ile Ile Met Cys Asp Ala Tyr Val Thr Asp Phe Pro Leu Asp
                465             470             475

cta gat att gat cca aaa gat gca aat aaa ggc aca cct gaa gaa act    1549
Leu Asp Ile Asp Pro Lys Asp Ala Asn Lys Gly Thr Pro Glu Glu Thr
                480             485             490

ggc agc tac ttg gta tca aag gat ctt ccc aag cat tgc ctc tat acc    1597
Gly Ser Tyr Leu Val Ser Lys Asp Leu Pro Lys His Cys Leu Tyr Thr
                495             500             505

aga ctc agt tca ctg caa aaa tta aag gaa cat cta gtc ttc aca gta    1645
Arg Leu Ser Ser Leu Gln Lys Leu Lys Glu His Leu Val Phe Thr Val
        510             515             520

tgt tta tca tat cag tac tca gga ttg gaa gat act gta gag gac aag    1693
Cys Leu Ser Tyr Gln Tyr Ser Gly Leu Glu Asp Thr Val Glu Asp Lys
525             530             535             540
```

235

```
cag gaa gtg aat gtt ggg aaa cct ctc att gct aaa tta gac atg cat   1741
Gln Glu Val Asn Val Gly Lys Pro Leu Ile Ala Lys Leu Asp Met His
            545             550             555

cga ggt ttg gga agg aag act tgc ttt caa act tgt ctt atg tct aat   1789
Arg Gly Leu Gly Arg Lys Thr Cys Phe Gln Thr Cys Leu Met Ser Asn
            560             565             570

ggt cct tac cag agt tct gca gcc acc tca gga gga gca ggg cat tat   1837
Gly Pro Tyr Gln Ser Ser Ala Ala Thr Ser Gly Gly Ala Gly His Tyr
            575             580             585

cac tca ttg caa gac cca ttc cat ggt gtt tac cat tca cat cct ggt   1885
His Ser Leu Gln Asp Pro Phe His Gly Val Tyr His Ser His Pro Gly
            590             595             600

aat cca agt aat gtt aca cca gca gat agc tgt cat tgc agc cgg act   1933
Asn Pro Ser Asn Val Thr Pro Ala Asp Ser Cys His Cys Ser Arg Thr
605             610             615             620

cca gat gca ttt att tca agt ttc gct cac cat gct tca tgt cat ttt   1981
Pro Asp Ala Phe Ile Ser Ser Phe Ala His His Ala Ser Cys His Phe
                625             630             635

agt aga agt aat gtg cca gta gag aca act gat gaa ata cca ttt agt   2029
Ser Arg Ser Asn Val Pro Val Glu Thr Thr Asp Glu Ile Pro Phe Ser
            640             645             650

ttc tct gac agg ctc aga att tct gaa aaa tgacctcctt gtttttgaaa     2079
Phe Ser Asp Arg Leu Arg Ile Ser Glu Lys
            655             660

gttagcataa ttttagatgc ctgtgaaata gtactgcact tacataaagt gagacattgt  2139

gaaaaggcaa atttgtatat gtagagaaag aatagtagta actgtttcat agcaaacttc  2199

aggactttga gatgttgaaa ttacattatt taattacaga cttcctcttt ct          2251
```

```
<210> 131
<211> 824
<212> PRT
<213> Homo sapiens

<400> 131
Met Ser Leu Leu Gly Asp Pro Leu Gln Ala Leu Pro Pro Ser Ala Ala
  1               5                  10                  15

Pro Thr Gly Pro Leu Leu Ala Pro Pro Ala Gly Ala Thr Leu Asn Arg
                20                  25                  30

Leu Arg Glu Pro Leu Leu Arg Arg Leu Ser Glu Leu Leu Asp Gln Ala
            35                  40                  45

Pro Glu Gly Arg Gly Trp Arg Arg Leu Ala Glu Leu Ala Gly Ser Arg
    50                  55                  60
```

236

```
Gly Arg Leu Arg Leu Ser Cys Leu Asp Leu Glu Gln Cys Ser Leu Lys
65              70              75              80

Val Leu Glu Pro Glu Gly Ser Pro Ser Leu Cys Leu Leu Lys Leu Met
            85              90              95

Gly Glu Lys Gly Cys Thr Val Thr Glu Leu Ser Asp Phe Leu Gln Ala
            100             105             110

Met Glu His Thr Glu Val Leu Gln Leu Leu Ser Pro Pro Gly Ile Lys
        115             120             125

Ile Thr Val Asn Pro Glu Ser Lys Ala Val Leu Ala Gly Gln Phe Val
    130             135             140

Lys Leu Cys Cys Arg Ala Thr Gly His Pro Phe Val Gln Tyr Gln Trp
145             150             155             160

Phe Lys Met Asn Lys Glu Ile Pro Asn Gly Asn Thr Ser Glu Leu Ile
            165             170             175

Phe Asn Ala Val His Val Lys Asp Ala Gly Phe Tyr Val Cys Arg Val
            180             185             190

Asn Asn Asn Phe Thr Phe Glu Phe Ser Gln Trp Ser Gln Leu Asp Val
        195             200             205

Cys Asp Ile Pro Glu Ser Phe Gln Arg Ser Val Asp Gly Val Ser Glu
    210             215             220

Ser Lys Leu Gln Ile Cys Val Glu Pro Thr Ser Gln Lys Leu Met Pro
225             230             235             240

Gly Ser Thr Leu Val Leu Gln Cys Val Ala Val Gly Ser Pro Ile Pro
            245             250             255

His Tyr Gln Trp Phe Lys Asn Glu Leu Pro Leu Thr His Glu Thr Lys
            260             265             270

Lys Leu Tyr Met Val Pro Tyr Val Asp Leu Glu His Gln Gly Thr Tyr
            275             280             285

Trp Cys His Val Tyr Asn Asp Arg Asp Ser Gln Asp Ser Lys Lys Val
    290             295             300

Glu Ile Ile Ile Gly Arg Thr Asp Glu Ala Val Glu Cys Thr Glu Asp
305             310             315             320

Glu Leu Asn Asn Leu Gly His Pro Asp Asn Lys Glu Gln Thr Thr Asp
            325             330             335

Gln Pro Leu Ala Lys Asp Lys Val Ala Leu Leu Ile Gly Asn Met Asn
            340             345             350

Tyr Arg Glu His Pro Lys Leu Lys Ala Pro Leu Val Asp Val Tyr Glu
    355             360             365
```

237

```
Leu Thr Asn Leu Leu Arg Gln Leu Asp Phe Lys Val Val Ser Leu Leu
    370             375             380

Asp Leu Thr Glu Tyr Glu Met Arg Asn Ala Val Asp Glu Phe Leu Leu
385             390             395                 400

Leu Leu Asp Lys Gly Val Tyr Gly Leu Leu Tyr Tyr Ala Gly His Gly
            405             410             415

Tyr Glu Asn Phe Gly Asn Ser Phe Met Val Pro Val Asp Ala Pro Asn
            420             425             430

Pro Tyr Arg Ser Glu Asn Cys Leu Cys Val Gln Asn Ile Leu Lys Leu
        435             440             445

Met Gln Glu Lys Glu Thr Gly Leu Asn Val Phe Leu Leu Asp Met Cys
    450             455             460

Arg Lys Arg Asn Asp Tyr Asp Asp Thr Ile Pro Ile Leu Asp Ala Leu
465             470             475                 480

Lys Val Thr Ala Asn Ile Val Phe Gly Tyr Ala Thr Cys Gln Gly Ala
            485             490             495

Glu Ala Phe Glu Ile Gln His Ser Gly Leu Ala Asn Gly Ile Phe Met
        500             505             510

Lys Phe Leu Lys Asp Arg Leu Leu Glu Asp Lys Lys Ile Thr Val Leu
        515             520             525

Leu Asp Glu Val Ala Glu Asp Met Gly Lys Cys His Leu Thr Lys Gly
    530             535             540

Lys Gln Ala Leu Glu Ile Arg Ser Ser Leu Ser Glu Lys Arg Ala Leu
545             550             555                 560

Thr Asp Pro Ile Gln Gly Thr Glu Tyr Ser Ala Glu Ser Leu Val Arg
            565             570             575

Asn Leu Gln Trp Ala Lys Ala His Glu Leu Pro Glu Ser Met Cys Leu
        580             585             590

Lys Phe Asp Cys Gly Val Gln Ile Gln Leu Gly Phe Ala Ala Glu Phe
        595             600             605

Ser Asn Val Met Ile Ile Tyr Thr Ser Ile Val Tyr Lys Pro Pro Glu
    610             615             620

Ile Ile Met Cys Asp Ala Tyr Val Thr Asp Phe Pro Leu Asp Leu Asp
625             630             635                 640

Ile Asp Pro Lys Asp Ala Asn Lys Gly Thr Pro Glu Glu Thr Gly Ser
            645             650             655

Tyr Leu Val Ser Lys Asp Leu Pro Lys His Cys Leu Tyr Thr Arg Leu
            660             665             670
```

238

```
Ser Ser Leu Gln Lys Leu Lys Glu His Leu Val Phe Thr Val Cys Leu
        675                 680                 685

Ser Tyr Gln Tyr Ser Gly Leu Glu Asp Thr Val Glu Asp Lys Gln Glu
    690                 695                 700

Val Asn Val Gly Lys Pro Leu Ile Ala Lys Leu Asp Met His Arg Gly
705                 710                 715                 720

Leu Gly Arg Lys Thr Cys Phe Gln Thr Cys Leu Met Ser Asn Gly Pro
            725                 730                 735

Tyr Gln Ser Ser Ala Ala Thr Ser Gly Gly Ala Gly His Tyr His Ser
            740                 745                 750

Leu Gln Asp Pro Phe His Gly Val Tyr His Ser His Pro Gly Asn Pro
        755                 760                 765

Ser Asn Val Thr Pro Ala Asp Ser Cys His Cys Ser Arg Thr Pro Asp
    770                 775                 780

Ala Phe Ile Ser Ser Phe Ala His His Ala Ser Cys His Phe Ser Arg
785                 790                 795                 800

Ser Asn Val Pro Val Glu Thr Thr Asp Glu Ile Pro Phe Ser Phe Ser
            805                 810                 815

Asp Arg Leu Arg Ile Ser Glu Lys
            820
```

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<210> 132
<211> 2828
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (165)..(2636)

<400> 132
ggggcgggga gcggacttcc tcctctgagg gccgtgccgc gctgccagat ttgttcttcc 60

gcccctgcct ccgcggctcg gaggcgagcg gaaggtgccc cggggccgag gcccgtgacg 120

gggcgggcgg gagccccggc agtccggggt cgccggcgag ggcc atg tcg ctg ttg 176
                                              Met Ser Leu Leu
                                               1

ggg gac ccg cta cag gcc ctg ccg ccc tcg gcc gcc ccc acg ggg ccg 224
Gly Asp Pro Leu Gln Ala Leu Pro Pro Ser Ala Ala Pro Thr Gly Pro
  5                 10                  15                  20

ctg ctc gcc cct ccg gcc ggc gcg acc ctc aac cgc ctg cgg gag ccg 272
Leu Leu Ala Pro Pro Ala Gly Ala Thr Leu Asn Arg Leu Arg Glu Pro
                25                  30                  35
```

239

```
ctg ctg cgg agg ctc agc gag ctc ctg gat cag gcg ccc gag ggc cgg   320
Leu Leu Arg Arg Leu Ser Glu Leu Leu Asp Gln Ala Pro Glu Gly Arg
         40                  45                  50

ggc tgg agg aga ctg gcg gag ctg gcg ggg agt cgc ggg cgc ctc cgc   368
Gly Trp Arg Arg Leu Ala Glu Leu Ala Gly Ser Arg Gly Arg Leu Arg
         55                  60                  65

ctc agt tgc cta gac ctg gag cag tgt tct ctt aag gta ctg gag cct   416
Leu Ser Cys Leu Asp Leu Glu Gln Cys Ser Leu Lys Val Leu Glu Pro
         70                  75                  80

gaa gga agc ccc agc ctg tgt ctg ctg aag tta atg ggt gaa aaa ggt   464
Glu Gly Ser Pro Ser Leu Cys Leu Leu Lys Leu Met Gly Glu Lys Gly
 85                  90                  95                 100

tgc aca gtc aca gaa ttg agt gat ttc ctg cag gct atg gaa cac act   512
Cys Thr Val Thr Glu Leu Ser Asp Phe Leu Gln Ala Met Glu His Thr
                 105                 110                 115

gaa gtt ctt cag ctt ctc agc ccc cca gga ata aag att act gta aac   560
Glu Val Leu Gln Leu Leu Ser Pro Pro Gly Ile Lys Ile Thr Val Asn
             120                 125                 130

cca gag tca aag gca gtc ttg gct gga cag ttt gtg aaa ctg tgt tgc   608
Pro Glu Ser Lys Ala Val Leu Ala Gly Gln Phe Val Lys Leu Cys Cys
             135                 140                 145

cgg gca act gga cat cct ttt gtt caa tat cag tgg ttc aaa atg aat   656
Arg Ala Thr Gly His Pro Phe Val Gln Tyr Gln Trp Phe Lys Met Asn
         150                 155                 160

aaa gag att cca aat gga aat aca tca gag ctt att ttt aat gca gtg   704
Lys Glu Ile Pro Asn Gly Asn Thr Ser Glu Leu Ile Phe Asn Ala Val
165                 170                 175                 180

cat gta aaa gat gca ggc ttt tat gtc tgt cga gtt aat aac aat ttc   752
His Val Lys Asp Ala Gly Phe Tyr Val Cys Arg Val Asn Asn Asn Phe
             185                 190                 195

acc ttt gaa ttc agc cag tgg tca cag ctg gat gtt tgc gac atc cca   800
Thr Phe Glu Phe Ser Gln Trp Ser Gln Leu Asp Val Cys Asp Ile Pro
             200                 205                 210

gag agc ttc cag aga agt gtt gat ggc gtc tct gaa tcc aag ttg caa   848
Glu Ser Phe Gln Arg Ser Val Asp Gly Val Ser Glu Ser Lys Leu Gln
             215                 220                 225

atc tgt gtt gaa cca act tcc caa aag ctg atg cca ggc agc aca ttg   896
Ile Cys Val Glu Pro Thr Ser Gln Lys Leu Met Pro Gly Ser Thr Leu
         230                 235                 240

gtt tta cag tgt gtt gct gtt gga agc cct att cct cac tac cag tgg   944
Val Leu Gln Cys Val Ala Val Gly Ser Pro Ile Pro His Tyr Gln Trp
245                 250                 255                 260

ttc aaa aat gaa tta cca tta aca cat gag acc aaa aag cta tac atg   992
```

240

Phe Lys Asn Glu Leu Pro Leu Thr His Glu Thr Lys Lys Leu Tyr Met
            265   270   275

gtg cct tat gtg gat ttg gaa cac caa gga acc tac tgg tgt cat gta   1040
Val Pro Tyr Val Asp Leu Glu His Gln Gly Thr Tyr Trp Cys His Val
            280   285   290

tat aat gat cga gac agt caa gat agc aag aag gta gaa atc atc ata   1088
Tyr Asn Asp Arg Asp Ser Gln Asp Ser Lys Lys Val Glu Ile Ile Ile
            295   300   305

gga aga aca gat gag gca gtg gag tgc act gaa gat gaa tta aat aat   1136
Gly Arg Thr Asp Glu Ala Val Glu Cys Thr Glu Asp Glu Leu Asn Asn
            310   315   320

ctt ggt cat cct gat aat aaa gag caa aca act gac cag cct ttg gcg   1184
Leu Gly His Pro Asp Asn Lys Glu Gln Thr Thr Asp Gln Pro Leu Ala
325   330   335   340

aag gac aag gtt gcc ctt ttg ata gga aat atg aat tac cgg gag cac   1232
Lys Asp Lys Val Ala Leu Leu Ile Gly Asn Met Asn Tyr Arg Glu His
                345   350   355

ccc aag ctc aaa gct cct ttg gtg gat gtg tac gaa ttg act aac tta   1280
Pro Lys Leu Lys Ala Pro Leu Val Asp Val Tyr Glu Leu Thr Asn Leu
                360   365   370

ctg aga cag ctg gac ttc aaa gtg gtt tca ctg ttg gat ctt act gaa   1328
Leu Arg Gln Leu Asp Phe Lys Val Val Ser Leu Leu Asp Leu Thr Glu
            375   380   385

tat gag atg cgt aat gct gtg gat gag ttt tta ctc ctt tta gac aag   1376
Tyr Glu Met Arg Asn Ala Val Asp Glu Phe Leu Leu Leu Leu Asp Lys
            390   395   400

gga gta tat ggg tta tta tat tat gca gga cat ggt tat gaa aat ttt   1424
Gly Val Tyr Gly Leu Leu Tyr Tyr Ala Gly His Gly Tyr Glu Asn Phe
405   410   415   420

ggg aac agc ttc atg gtc ccc gtt gat gct cca aat cca tat agg tct   1472
Gly Asn Ser Phe Met Val Pro Val Asp Ala Pro Asn Pro Tyr Arg Ser
                425   430   435

gaa aat tgt ctg tgt gta caa aat ata ctg aaa ttg atg caa gaa aaa   1520
Glu Asn Cys Leu Cys Val Gln Asn Ile Leu Lys Leu Met Gln Glu Lys
                440   445   450

gaa act gga ctt aat gtg ttc tta ttg gat atg tgt agg aaa aga aat   1568
Glu Thr Gly Leu Asn Val Phe Leu Leu Asp Met Cys Arg Lys Arg Asn
            455   460   465

gac tac gat gat acc att cca atc ttg gat gca cta aaa gtc acc gcc   1616
Asp Tyr Asp Asp Thr Ile Pro Ile Leu Asp Ala Leu Lys Val Thr Ala
            470   475   480

aat att gtg ttt gga tat gcc acg tgt caa gga gca gaa gct ttt gaa   1664
Asn Ile Val Phe Gly Tyr Ala Thr Cys Gln Gly Ala Glu Ala Phe Glu

241

```
        485                490                495                500

atc cag cat tct gga ttg gca aat gga atc ttt atg aaa ttt tta aaa    1712
Ile Gln His Ser Gly Leu Ala Asn Gly Ile Phe Met Lys Phe Leu Lys
                505                510                515

gac aga tta tta gaa gat aag aaa atc act gtg tta ctg gat gaa gtt    1760
Asp Arg Leu Leu Glu Asp Lys Lys Ile Thr Val Leu Leu Asp Glu Val
                520                525                530

gca gaa gat atg ggt aag tgt cac ctt acc aaa ggc aaa cag gct cta    1808
Ala Glu Asp Met Gly Lys Cys His Leu Thr Lys Gly Lys Gln Ala Leu
                535                540                545

gag att cga agt agt tta tct gag aag aga gca ctt act gat cca ata    1856
Glu Ile Arg Ser Ser Leu Ser Glu Lys Arg Ala Leu Thr Asp Pro Ile
                550                555                560

cag gga aca gaa tat tct gct gaa tct ctt gtg cgg aat cta cag tgg    1904
Gln Gly Thr Glu Tyr Ser Ala Glu Ser Leu Val Arg Asn Leu Gln Trp
565                570                575                580

gcc aag gct cat gaa ctt cca gaa agt atg tgt ctt aag ttt gac tgt    1952
Ala Lys Ala His Glu Leu Pro Glu Ser Met Cys Leu Lys Phe Asp Cys
                585                590                595

ggt gtt cag att caa tta gga ttt gca gct gag ttt tcc aat gtc atg    2000
Gly Val Gln Ile Gln Leu Gly Phe Ala Ala Glu Phe Ser Asn Val Met
                600                605                610

atc atc tat aca agt ata gtt tac aaa cca ccg gag ata ata atg tgt    2048
Ile Ile Tyr Thr Ser Ile Val Tyr Lys Pro Pro Glu Ile Ile Met Cys
                615                620                625

gat gcc tac gtt act gat ttt cca ctt gat cta gat att gat cca aaa    2096
Asp Ala Tyr Val Thr Asp Phe Pro Leu Asp Leu Asp Ile Asp Pro Lys
                630                635                640

gat gca aat aaa ggc aca cct gaa gaa act ggc agc tac ttg gta tca    2144
Asp Ala Asn Lys Gly Thr Pro Glu Glu Thr Gly Ser Tyr Leu Val Ser
645                650                655                660

aag gat ctt ccc aag cat tgc ctc tat acc aga ctc agt tca ctg caa    2192
Lys Asp Leu Pro Lys His Cys Leu Tyr Thr Arg Leu Ser Ser Leu Gln
                665                670                675

aaa tta aag gaa cat cta gtc ttc aca gta tgt tta tca tat cag tac    2240
Lys Leu Lys Glu His Leu Val Phe Thr Val Cys Leu Ser Tyr Gln Tyr
                680                685                690

tca gga ttg gaa gat act gta gag gac aag cag gaa gtg aat gtt ggg    2288
Ser Gly Leu Glu Asp Thr Val Glu Asp Lys Gln Glu Val Asn Val Gly
                695                700                705

aaa cct ctc att gct aaa tta gac atg cat cga ggt ttg gga agg aag    2336
Lys Pro Leu Ile Ala Lys Leu Asp Met His Arg Gly Leu Gly Arg Lys
                710                715                720
```

242

```
act tgc ttt caa act tgt ctt atg tct aat ggt cct tac cag agt tct    2384
Thr Cys Phe Gln Thr Cys Leu Met Ser Asn Gly Pro Tyr Gln Ser Ser
725             730             735             740

gca gcc acc tca gga gga gca ggg cat tat cac tca ttg caa gac cca    2432
Ala Ala Thr Ser Gly Gly Ala Gly His Tyr His Ser Leu Gln Asp Pro
                745             750             755

ttc cat ggt gtt tac cat tca cat cct ggt aat cca agt aat gtt aca    2480
Phe His Gly Val Tyr His Ser His Pro Gly Asn Pro Ser Asn Val Thr
            760             765             770

cca gca gat agc tgt cat tgc agc cgg act cca gat gca ttt att tca    2528
Pro Ala Asp Ser Cys His Cys Ser Arg Thr Pro Asp Ala Phe Ile Ser
            775             780             785

agt ttc gct cac cat gct tca tgt cat ttt agt aga agt aat gtg cca    2576
Ser Phe Ala His His Ala Ser Cys His Phe Ser Arg Ser Asn Val Pro
        790             795             800

gta gag aca act gat gaa ata cca ttt agt ttc tct gac agg ctc aga    2624
Val Glu Thr Thr Asp Glu Ile Pro Phe Ser Phe Ser Asp Arg Leu Arg
805             810             815             820

att tct gaa aaa tgacctcctt gtttttgaaa gttagcataa ttttagatgc        2676
Ile Ser Glu Lys

ctgtgaaata gtactgcact tacataaagt gagacattgt gaaaaggcaa atttgtatat  2736

gtagagaaag aatagtagta actgtttcat agcaaacttc aggactttga gatgttgaaa  2796

ttacattatt taattacaga cttcctcttt ct                                2828


<210> 133
<211> 919
<212> PRT
<213> Homo sapiens

<400> 133
Met Lys Val Ala Arg Phe Gln Lys Ile Pro Asn Gly Glu Asn Glu Thr
1               5               10              15

Met Ile Pro Val Leu Thr Ser Lys Lys Ala Ser Glu Leu Pro Val Ser
            20              25              30

Glu Val Ala Ser Ile Leu Gln Ala Asp Leu Gln Asn Gly Leu Asn Lys
        35              40              45

Cys Glu Val Ser His Arg Arg Ala Phe His Gly Trp Asn Glu Phe Asp
    50              55              60

Ile Ser Glu Asp Glu Pro Leu Trp Lys Lys Tyr Ile Ser Gln Phe Lys
65              70              75              80

Asn Pro Leu Ile Met Leu Leu Leu Ala Ser Ala Val Ile Ser Val Leu
```

```
                    85                    90                    95

Met His Gln Phe Asp Asp Ala Val Ser Ile Thr Val Ala Ile Leu Ile
            100                 105                 110

Val Val Thr Val Ala Phe Val Gln Glu Tyr Arg Ser Glu Lys Ser Leu
            115                 120                 125

Glu Glu Leu Ser Lys Leu Val Pro Pro Glu Cys His Cys Val Arg Glu
    130                 135                 140

Gly Lys Leu Glu His Thr Leu Ala Arg Asp Leu Val Pro Gly Asp Thr
145                 150                 155                 160

Val Cys Leu Ser Val Gly Asp Arg Val Pro Ala Asp Leu Arg Leu Phe
                165                 170                 175

Glu Ala Val Asp Leu Ser Ile Asp Glu Ser Ser Leu Thr Gly Glu Thr
                180                 185                 190

Thr Pro Cys Ser Lys Val Thr Ala Pro Gln Pro Ala Ala Thr Asn Gly
            195                 200                 205

Asp Leu Ala Ser Arg Ser Asn Ile Ala Phe Met Gly Thr Leu Val Arg
    210                 215                 220

Cys Gly Lys Ala Lys Gly Val Val Ile Gly Thr Gly Glu Asn Ser Glu
225                 230                 235                 240

Phe Gly Glu Val Phe Lys Met Met Gln Ala Glu Glu Ala Pro Lys Thr
                245                 250                 255

Pro Leu Gln Lys Ser Met Asp Leu Leu Gly Lys Gln Leu Ser Phe Tyr
                260                 265                 270

Ser Phe Gly Ile Ile Gly Ile Ile Met Leu Val Gly Trp Leu Leu Gly
            275                 280                 285

Lys Asp Ile Leu Glu Met Phe Thr Ile Ser Val Ser Leu Ala Val Ala
    290                 295                 300

Ala Ile Pro Glu Gly Leu Pro Ile Val Val Thr Val Thr Leu Ala Leu
305                 310                 315                 320

Gly Val Met Arg Met Val Lys Lys Arg Ala Ile Val Lys Lys Leu Pro
            325                 330                 335

Ile Val Glu Thr Leu Gly Cys Cys Asn Val Ile Cys Ser Asp Lys Thr
            340                 345                 350

Gly Thr Leu Thr Lys Asn Glu Met Thr Val Thr His Ile Phe Thr Ser
            355                 360                 365

Asp Gly Leu His Ala Glu Val Thr Gly Val Gly Tyr Asn Gln Phe Gly
    370                 375                 380

Glu Val Ile Val Asp Gly Asp Val Val His Gly Phe Tyr Asn Pro Ala
```

244

385   390   395   400

Val Ser Arg Ile Val Glu Ala Gly Cys Val Cys Asn Asp Ala Val Ile
                405   410   415

Arg Asn Asn Thr Leu Met Gly Lys Pro Thr Glu Gly Ala Leu Ile Ala
                420   425   430

Leu Ala Met Lys Met Gly Leu Asp Gly Leu Gln Gln Asp Tyr Ile Arg
                435   440   445

Lys Ala Glu Tyr Pro Phe Ser Ser Glu Gln Lys Trp Met Ala Val Lys
                450   455   460

Cys Val His Arg Thr Gln Gln Asp Arg Pro Glu Ile Cys Phe Met Lys
465   470   475   480

Gly Ala Tyr Glu Gln Val Ile Lys Tyr Cys Thr Thr Tyr Gln Ser Lys
                485   490   495

Gly Gln Thr Leu Thr Leu Thr Gln Gln Gln Arg Asp Val Tyr Gln Gln
                500   505   510

Glu Lys Ala Arg Met Gly Ser Ala Gly Leu Arg Val Leu Ala Leu Ala
                515   520   525

Ser Gly Pro Glu Leu Gly Gln Leu Thr Phe Leu Gly Leu Val Gly Ile
                530   535   540

Ile Asp Pro Pro Arg Thr Gly Val Lys Glu Ala Val Thr Thr Leu Ile
545   550   555   560

Ala Ser Gly Val Ser Ile Lys Met Ile Thr Gly Asp Ser Gln Glu Thr
                565   570   575

Ala Val Ala Ile Ala Ser Arg Leu Gly Leu Tyr Ser Lys Thr Ser Gln
                580   585   590

Ser Val Ser Gly Glu Glu Ile Asp Ala Met Asp Val Gln Gln Leu Ser
                595   600   605

Gln Ile Val Pro Lys Val Ala Val Phe Tyr Arg Ala Ser Pro Arg His
                610   615   620

Lys Met Lys Ile Ile Lys Ser Leu Gln Lys Asn Gly Ser Val Val Ala
625   630   635   640

Met Thr Gly Asp Gly Val Asn Asp Ala Val Ala Leu Lys Ala Ala Asp
                645   650   655

Ile Gly Val Ala Met Gly Gln Thr Gly Thr Asp Val Cys Lys Glu Ala
                660   665   670

Ala Asp Met Ile Leu Val Asp Asp Asp Phe Gln Thr Ile Met Ser Ala
                675   680   685

Ile Glu Glu Gly Lys Gly Ile Tyr Asn Asn Ile Lys Asn Phe Val Arg

```
       690                  695                  700
Phe Gln Leu Ser Thr Ser Ile Ala Ala Leu Thr Leu Ile Ser Leu Ala
705                     710                 715                 720
Thr Leu Met Asn Phe Pro Asn Pro Leu Asn Ala Met Gln Ile Leu Trp
                    725                 730                 735
Ile Asn Ile Ile Met Asp Gly Pro Pro Ala Gln Ser Leu Gly Val Glu
                740                 745                 750
Pro Val Asp Lys Asp Val Ile Arg Lys Pro Pro Arg Asn Trp Lys Asp
                755                 760                 765
Ser Ile Leu Thr Lys Asn Leu Ile Leu Lys Ile Leu Val Ser Ser Ile
        770                 775                 780
Ile Ile Val Cys Gly Thr Leu Phe Val Phe Trp Arg Glu Leu Arg Asp
785                     790                 795                 800
Asn Val Ile Thr Pro Arg Asp Thr Thr Met Thr Phe Thr Cys Phe Val
                805                 810                 815
Phe Phe Asp Met Phe Asn Ala Leu Ser Ser Arg Ser Gln Thr Lys Ser
                820                 825                 830
Val Phe Glu Ile Gly Leu Cys Ser Asn Arg Met Phe Cys Tyr Ala Val
            835                 840                 845
Leu Gly Ser Ile Met Gly Gln Leu Leu Val Ile Tyr Phe Pro Pro Leu
        850                 855                 860
Gln Lys Val Phe Gln Thr Glu Ser Leu Ser Ile Leu Asp Leu Leu Phe
865                     870                 875                 880
Leu Leu Gly Leu Thr Ser Ser Val Cys Ile Val Ala Glu Ile Ile Lys
                885                 890                 895
Lys Val Glu Arg Ser Arg Glu Lys Ile Gln Lys His Val Ser Ser Thr
                900                 905                 910
Ser Ser Ser Phe Leu Glu Val
            915
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<210> 134
<211> 3612
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (427)..(3183)

<400> 134
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246

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cctccccgcc cgccctctct ccctcccttc ctccctcccg ctcgcttctt ctcacgccgg   120

gagcaggctc ccgcctcgca ccgctgcccc gcgagcagct cctcttctcc cgaggcgcgc   180

ggggcgcccc cgcgagcccc gcggctgaga ccccgcagcc tggaggaggg ctgtccgggg   240

ctttggatgc tgctgctagg ggtggtggga gcagccgtgg gacgcgtggc cgggagcggg   300

ggtgacagcc tgggattccg ggggcttctc ttccttgtcc tcctcctctc ctctctattc   360

ccagtgtggc cgtggctgac actaaagact ttgtagccat caacccgagt gcagtttcga   420
```

```
tggaaa atg aag gtt gca cgt ttt caa aaa ata cct aat ggt gaa aat     468
       Met Lys Val Ala Arg Phe Gln Lys Ile Pro Asn Gly Glu Asn
       1               5                   10

gag aca atg att cct gta ttg aca tca aaa aaa gca agt gaa tta cca    516
Glu Thr Met Ile Pro Val Leu Thr Ser Lys Lys Ala Ser Glu Leu Pro
15              20                  25                  30

gtc agt gaa gtt gca agc att ctc caa gct gat ctt cag aat ggt cta    564
Val Ser Glu Val Ala Ser Ile Leu Gln Ala Asp Leu Gln Asn Gly Leu
                35                  40                  45

aac aaa tgt gaa gtt agt cat agg cga gcc ttt cat ggc tgg aat gag    612
Asn Lys Cys Glu Val Ser His Arg Arg Ala Phe His Gly Trp Asn Glu
            50                  55                  60

ttt gat att agt gaa gat gag cca ctg tgg aag aag tat att tct cag    660
Phe Asp Ile Ser Glu Asp Glu Pro Leu Trp Lys Lys Tyr Ile Ser Gln
        65                  70                  75

ttt aaa aat ccc ctt att atg ctg ctt ctg gct tct gca gtc atc agt    708
Phe Lys Asn Pro Leu Ile Met Leu Leu Leu Ala Ser Ala Val Ile Ser
    80                  85                  90

gtt tta atg cat cag ttt gat gat gcc gtc agt atc act gtg gca ata    756
Val Leu Met His Gln Phe Asp Asp Ala Val Ser Ile Thr Val Ala Ile
95                  100                 105                 110

ctt atc gtt gtt aca gtt gcc ttt gtt cag gaa tat cgt tca gaa aaa    804
Leu Ile Val Val Thr Val Ala Phe Val Gln Glu Tyr Arg Ser Glu Lys
                115                 120                 125

tct ctt gaa gaa ttg agt aaa ctt gtg cca cca gaa tgc cat tgt gtg    852
Ser Leu Glu Glu Leu Ser Lys Leu Val Pro Pro Glu Cys His Cys Val
            130                 135                 140

cgt gaa gga aaa ttg gag cat aca ctt gcc cga gac ttg gtt cca ggt    900
Arg Glu Gly Lys Leu Glu His Thr Leu Ala Arg Asp Leu Val Pro Gly
            145                 150                 155

gat aca gtt tgc ctt tct gtt ggg gat aga gtt cct gct gac tta cgc    948
Asp Thr Val Cys Leu Ser Val Gly Asp Arg Val Pro Ala Asp Leu Arg
160                 165                 170

ttg ttt gag gct gtg gat ctt tcc att gat gag tcc agc ttg aca ggt    996
```

247

```
Leu Phe Glu Ala Val Asp Leu Ser Ile Asp Glu Ser Ser Leu Thr Gly
175             180             185             190

gag aca acg cct tgt tct aag gtg aca gct cct cag cca gct gca act    1044
Glu Thr Thr Pro Cys Ser Lys Val Thr Ala Pro Gln Pro Ala Ala Thr
                195             200             205

aat gga gat ctt gca tcg aga agt aac att gcc ttt atg gga aca ctg    1092
Asn Gly Asp Leu Ala Ser Arg Ser Asn Ile Ala Phe Met Gly Thr Leu
            210             215             220

gtc aga tgt ggc aaa gca aag ggt gtt gtc att gga aca gga gaa aat    1140
Val Arg Cys Gly Lys Ala Lys Gly Val Val Ile Gly Thr Gly Glu Asn
        225             230             235

tct gaa ttt ggg gag gtt ttt aaa atg atg caa gca gaa gag gca cca    1188
Ser Glu Phe Gly Glu Val Phe Lys Met Met Gln Ala Glu Glu Ala Pro
    240             245             250

aaa acc cct ctg cag aag agc atg gac ctc tta gga aaa caa ctt tcc    1236
Lys Thr Pro Leu Gln Lys Ser Met Asp Leu Leu Gly Lys Gln Leu Ser
255             260             265             270

ttt tac tcc ttt ggt ata ata gga atc atc atg ttg gtt ggc tgg tta    1284
Phe Tyr Ser Phe Gly Ile Ile Gly Ile Ile Met Leu Val Gly Trp Leu
                275             280             285

ctg gga aaa gat atc ctg gaa atg ttt act att agt gta agt ttg gct    1332
Leu Gly Lys Asp Ile Leu Glu Met Phe Thr Ile Ser Val Ser Leu Ala
            290             295             300

gta gca gca att cct gaa ggt ctc ccc att gtg gtc aca gtg acg cta    1380
Val Ala Ala Ile Pro Glu Gly Leu Pro Ile Val Val Thr Val Thr Leu
        305             310             315

gct ctt ggt gtt atg aga atg gtg aag aaa agg gcc att gtg aaa aag    1428
Ala Leu Gly Val Met Arg Met Val Lys Lys Arg Ala Ile Val Lys Lys
    320             325             330

ctg cct att gtt gaa act ctg ggc tgc tgt aat gtg att tgt tca gat    1476
Leu Pro Ile Val Glu Thr Leu Gly Cys Cys Asn Val Ile Cys Ser Asp
335             340             345             350

aaa act gga aca ctg acg aag aat gaa atg act gtt act cac ata ttt    1524
Lys Thr Gly Thr Leu Thr Lys Asn Glu Met Thr Val Thr His Ile Phe
            355             360             365

act tca gat ggt ctg cat gct gag gtt act gga gtt ggc tat aat caa    1572
Thr Ser Asp Gly Leu His Ala Glu Val Thr Gly Val Gly Tyr Asn Gln
            370             375             380

ttt ggg gaa gtg att gtt gat ggt gat gtt gtt cat gga ttc tat aac    1620
Phe Gly Glu Val Ile Val Asp Gly Asp Val Val His Gly Phe Tyr Asn
        385             390             395

cca gct gtt agc aga att gtt gag gcg ggc tgt gtg tgc aat gat gct    1668
Pro Ala Val Ser Arg Ile Val Glu Ala Gly Cys Val Cys Asn Asp Ala
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248

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            400                   405                   410
gta att aga aac aat act cta atg ggg aag cca aca gaa ggg gcc tta    1716
Val Ile Arg Asn Asn Thr Leu Met Gly Lys Pro Thr Glu Gly Ala Leu
415                 420                 425                 430

att gct ctt gca atg aag atg ggt ctt gat gga ctt caa caa gac tac    1764
Ile Ala Leu Ala Met Lys Met Gly Leu Asp Gly Leu Gln Gln Asp Tyr
                    435                 440                 445

atc aga aaa gct gaa tac cct ttt agc tct gag caa aag tgg atg gct    1812
Ile Arg Lys Ala Glu Tyr Pro Phe Ser Ser Glu Gln Lys Trp Met Ala
                450                 455                 460

gtt aag tgt gta cac cga aca cag cag gac aga cca gag att tgt ttt    1860
Val Lys Cys Val His Arg Thr Gln Gln Asp Arg Pro Glu Ile Cys Phe
                465                 470                 475

atg aaa ggt gct tac gaa caa gta att aag tac tgt act aca tac cag    1908
Met Lys Gly Ala Tyr Glu Gln Val Ile Lys Tyr Cys Thr Thr Tyr Gln
            480                 485                 490

agc aaa ggg cag acc ttg aca ctt act cag cag cag aga gat gtg tac    1956
Ser Lys Gly Gln Thr Leu Thr Leu Thr Gln Gln Gln Arg Asp Val Tyr
495                 500                 505                 510

caa caa gag aag gca cgc atg ggc tca gcg gga ctc aga gtt ctt gct    2004
Gln Gln Glu Lys Ala Arg Met Gly Ser Ala Gly Leu Arg Val Leu Ala
                515                 520                 525

ttg gct tct ggt cct gaa ctg gga cag ctg aca ttt ctt ggc ttg gtg    2052
Leu Ala Ser Gly Pro Glu Leu Gly Gln Leu Thr Phe Leu Gly Leu Val
                530                 535                 540

gga atc att gat cca cct aga act ggt gtg aaa gaa gct gtt aca aca    2100
Gly Ile Ile Asp Pro Pro Arg Thr Gly Val Lys Glu Ala Val Thr Thr
                545                 550                 555

ctc att gcc tca gga gta tca ata aaa atg att act gga gat tca cag    2148
Leu Ile Ala Ser Gly Val Ser Ile Lys Met Ile Thr Gly Asp Ser Gln
            560                 565                 570

gag act gca gtt gca atc gcc agt cgt ctg gga ttg tat tcc aaa act    2196
Glu Thr Ala Val Ala Ile Ala Ser Arg Leu Gly Leu Tyr Ser Lys Thr
575                 580                 585                 590

tcc cag tca gtc tca gga gaa gaa ata gat gca atg gat gtt cag cag    2244
Ser Gln Ser Val Ser Gly Glu Glu Ile Asp Ala Met Asp Val Gln Gln
                595                 600                 605

ctt tca caa ata gta cca aag gtt gca gta ttt tac aga gct agc cca    2292
Leu Ser Gln Ile Val Pro Lys Val Ala Val Phe Tyr Arg Ala Ser Pro
                610                 615                 620

agg cac aag atg aaa att att aag tcg cta cag aag aac ggt tca gtt    2340
Arg His Lys Met Lys Ile Ile Lys Ser Leu Gln Lys Asn Gly Ser Val
                625                 630                 635
```

249

```
gta gcc atg aca gga gat gga gta aat gat gca gtt gct ctg aag gct    2388
Val Ala Met Thr Gly Asp Gly Val Asn Asp Ala Val Ala Leu Lys Ala
640             645             650

gca gac att gga gtt gcg atg ggc cag act ggt aca gat gtt tgc aaa    2436
Ala Asp Ile Gly Val Ala Met Gly Gln Thr Gly Thr Asp Val Cys Lys
655             660             665             670

gag gca gca gac atg atc cta gtg gat gat gat ttt caa acc ata atg    2484
Glu Ala Ala Asp Met Ile Leu Val Asp Asp Asp Phe Gln Thr Ile Met
675             680             685

tct gca atc gaa gag ggt aaa ggg att tat aat aac att aaa aat ttc    2532
Ser Ala Ile Glu Glu Gly Lys Gly Ile Tyr Asn Asn Ile Lys Asn Phe
690             695             700

gtt aga ttc cag ctg agc acg agt ata gca gca tta act tta atc tca    2580
Val Arg Phe Gln Leu Ser Thr Ser Ile Ala Ala Leu Thr Leu Ile Ser
705             710             715

ttg gct aca tta atg aac ttt cct aat cct ctc aat gcc atg cag att    2628
Leu Ala Thr Leu Met Asn Phe Pro Asn Pro Leu Asn Ala Met Gln Ile
720             725             730

ttg tgg atc aat att att atg gat gga ccc cca gct cag agc ctt gga    2676
Leu Trp Ile Asn Ile Ile Met Asp Gly Pro Pro Ala Gln Ser Leu Gly
735             740             745             750

gta gaa cca gtg gat aaa gat gtc att cgt aaa cct cct cgc aac tgg    2724
Val Glu Pro Val Asp Lys Asp Val Ile Arg Lys Pro Pro Arg Asn Trp
755             760             765

aaa gac agc att ttg act aaa aac ttg ata ctt aaa ata ctt gtt tca    2772
Lys Asp Ser Ile Leu Thr Lys Asn Leu Ile Leu Lys Ile Leu Val Ser
770             775             780

tca ata atc att gtt tgt ggg act ttg ttt gtc ttc tgg cgt gag cta    2820
Ser Ile Ile Ile Val Cys Gly Thr Leu Phe Val Phe Trp Arg Glu Leu
785             790             795

cga gac aat gtg att aca cct cga gac aca aca atg acc ttc aca tgc    2868
Arg Asp Asn Val Ile Thr Pro Arg Asp Thr Thr Met Thr Phe Thr Cys
800             805             810

ttt gtg ttt ttt gac atg ttc aat gca cta agt tcc aga tcc cag acc    2916
Phe Val Phe Phe Asp Met Phe Asn Ala Leu Ser Ser Arg Ser Gln Thr
815             820             825             830

aag tct gtg ttt gag att gga ctc tgc agt aat aga atg ttt tgc tat    2964
Lys Ser Val Phe Glu Ile Gly Leu Cys Ser Asn Arg Met Phe Cys Tyr
835             840             845

gca gtt ctt gga tcc atc atg gga caa tta cta gtt att tac ttt cct    3012
Ala Val Leu Gly Ser Ile Met Gly Gln Leu Leu Val Ile Tyr Phe Pro
850             855             860
```

250

```
ccg ctt cag aag gtt ttt cag act gag agc cta agc ata ctg gat ctg    3060
Pro Leu Gln Lys Val Phe Gln Thr Glu Ser Leu Ser Ile Leu Asp Leu
        865                 870                 875

ttg ttt ctt ttg ggt ctc acc tca tca gtg tgc ata gtg gca gaa att    3108
Leu Phe Leu Leu Gly Leu Thr Ser Ser Val Cys Ile Val Ala Glu Ile
        880                 885                 890

ata aag aag gtt gaa agg agc agg gaa aag atc cag aag cat gtt agt    3156
Ile Lys Lys Val Glu Arg Ser Arg Glu Lys Ile Gln Lys His Val Ser
895                 900                 905                 910

tcg aca tca tca tct ttt ctt gaa gta tgatgcatat tgcattattt          3203
Ser Thr Ser Ser Ser Phe Leu Glu Val
                915
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tatttgcaaa ctaggaattg cagtctgagg atcatttaga agggcaagtt caagaggata 3263

tgaagatttg agaacttttt aactattcat tgactaaaaa tgaacattaa tgttaaagac 3323

ttaagacttt aacctgctgg cagtcccaaa tgaaattatg caactttgat atcatattcc 3383

ttgatttaaa ttggcttttg tgattgagtg aaactttata aagcatatgg tcagttattt 3443

aattaaaaag gcaaaacctg aaccaccttc tgcacttaaa gaagtctaac agtacaaata 3503

cactatctat cttagataga tatatttttt tttattttta aatattgtac tatttatggt 3563

ggtggggctt tcttactaat acacaaataa attaatcat ttcaaaggc   3612

<210> 135
<211> 382
<212> PRT
<213> Homo sapiens

<400> 135

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Met Gly Ala Phe Leu Asp Lys Pro Lys Met Glu Lys His Asn Ala Gln
 1               5                  10                  15

Gly Gln Gly Asn Gly Leu Arg Tyr Gly Leu Ser Ser Met Gln Gly Trp
                20                  25                  30

Arg Val Glu Met Glu Asp Ala His Thr Ala Val Ile Gly Leu Pro Ser
            35                  40                  45

Gly Leu Glu Ser Trp Ser Phe Phe Ala Val Tyr Asp Gly His Ala Gly
        50                  55                  60

Ser Gln Val Ala Lys Tyr Cys Cys Glu His Leu Leu Asp His Ile Thr
 65                  70                  75                  80

Asn Asn Gln Asp Phe Lys Gly Ser Ala Gly Ala Pro Ser Val Glu Asn
                85                  90                  95

Val Lys Asn Gly Ile Arg Thr Gly Phe Leu Glu Ile Asp Glu His Met
            100                 105                 110
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251

Arg Val Met Ser Glu Lys Lys His Gly Ala Asp Arg Ser Gly Ser Thr
        115   120   125

Ala Val Gly Val Leu Ile Ser Pro Gln His Thr Tyr Phe Ile Asn Cys
        130   135   140

Gly Asp Ser Arg Gly Leu Leu Cys Arg Asn Arg Lys Val His Phe Phe
145   150   155   160

Thr Gln Asp His Lys Pro Ser Asn Pro Leu Glu Lys Glu Arg Ile Gln
                165   170   175

Asn Ala Gly Gly Ser Val Met Ile Gln Arg Val Asn Gly Ser Leu Ala
            180   185   190

Val Ser Arg Ala Leu Gly Asp Phe Asp Tyr Lys Cys Val His Gly Lys
        195   200   205

Gly Pro Thr Glu Gln Leu Val Ser Pro Glu Pro Glu Val His Asp Ile
    210   215   220

Glu Arg Ser Glu Glu Asp Asp Gln Phe Ile Ile Leu Ala Cys Asp Gly
225   230   235   240

Ile Trp Asp Val Met Gly Asn Glu Glu Leu Cys Asp Phe Val Arg Ser
            245   250   255

Arg Leu Glu Val Thr Asp Asp Leu Glu Lys Val Cys Asn Glu Val Val
            260   265   270

Asp Thr Cys Leu Tyr Lys Gly Ser Arg Asp Asn Met Ser Val Ile Leu
        275   280   285

Ile Cys Phe Pro Asn Ala Pro Lys Val Ser Pro Glu Ala Val Lys Lys
    290   295   300

Glu Ala Glu Leu Asp Lys Tyr Leu Glu Cys Arg Val Glu Glu Ile Ile
305   310   315   320

Lys Lys Gln Gly Glu Gly Val Pro Asp Leu Val His Val Met Arg Thr
                325   330   335

Leu Ala Ser Glu Asn Ile Pro Ser Leu Pro Pro Gly Gly Glu Leu Ala
            340   345   350

Ser Lys Arg Asn Val Ile Glu Ala Val Tyr Asn Arg Leu Asn Pro Tyr
            355   360   365

Lys Asn Asp Asp Thr Asp Ser Thr Ser Thr Asp Asp Met Trp
    370   375   380

<210> 136
<211> 2467
<212> DNA
<213> Homo sapiens

252

<220>
<221> CDS
<222> (444)..(1589)

<400> 136

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acgggagcgc gcgcgggagc tagagagcag tggtctcggc gctcgtccgg cccgcagctt  60

cgggtcctca ggcggctgtt gctccggaac gggtggttgg ggagggggg gtgggggggac  120

tctagacagc tgaggcgcga aagcgatgag tcctcggctc ttcctcctcc ttctccggga  180

cccgctctct gcctccctct ccaacgcccg atgatctga gccgcgaggg cgccgacagc  240

cggggggcccg gacgcagccc ggctcctccc ctcctccgcc ccttccccag cctgacctgg  300

cccgccgctg cagcggtgac ccctcccccg gctgccgccg tcgccgccgc ggtgaccccc  360

tccccggctg ccgccgccgc cgcctcggcc gaccagggac ctgccgcct gcggctgctc  420

cggacctaga ggatcaagac ata atg gga gca ttt tta gac aag cca aag atg  473
                            Met Gly Ala Phe Leu Asp Lys Pro Lys Met
                             1               5                  10

gaa aag cat aat gcc cag ggg cag ggt aat ggg ttg cga tat ggg cta  521
Glu Lys His Asn Ala Gln Gly Gln Gly Asn Gly Leu Arg Tyr Gly Leu
                15                  20                  25

agc agc atg caa ggc tgg cgt gtt gaa atg gag gat gca cat acg gct  569
Ser Ser Met Gln Gly Trp Arg Val Glu Met Glu Asp Ala His Thr Ala
        30                  35                  40

gtg atc ggt ttg cca agt gga ctt gaa tcg tgg tca ttc ttt gct gtg  617
Val Ile Gly Leu Pro Ser Gly Leu Glu Ser Trp Ser Phe Phe Ala Val
        45                  50                  55

tat gat ggg cat gct ggt tct cag gtt gcc aaa tac tgc tgt gag cat  665
Tyr Asp Gly His Ala Gly Ser Gln Val Ala Lys Tyr Cys Cys Glu His
    60                  65                  70

ttg tta gat cac atc acc aat aac cag gat ttt aaa ggg tct gca gga  713
Leu Leu Asp His Ile Thr Asn Asn Gln Asp Phe Lys Gly Ser Ala Gly
75                  80                  85                  90

gca cct tct gtg gaa aat gta aag aat gga atc aga aca ggt ttt ctg  761
Ala Pro Ser Val Glu Asn Val Lys Asn Gly Ile Arg Thr Gly Phe Leu
                95                  100                 105

gag att gat gaa cac atg aga gtt atg tca gag aag aaa cat ggt gca  809
Glu Ile Asp Glu His Met Arg Val Met Ser Glu Lys Lys His Gly Ala
                110                 115                 120

gat aga agt ggg tca aca gct gta ggt gtc tta att tct ccc caa cat  857
Asp Arg Ser Gly Ser Thr Ala Val Gly Val Leu Ile Ser Pro Gln His
                125                 130                 135

act tat ttc att aac tgt gga gac tca aga ggt tta ctt tgt agg aac  905
```

253

```
Thr Tyr Phe Ile Asn Cys Gly Asp Ser Arg Gly Leu Leu Cys Arg Asn
140             145             150

agg aaa gtt cat ttc ttc aca caa gat cac aaa cca agt aat ccg ctg    953
Arg Lys Val His Phe Phe Thr Gln Asp His Lys Pro Ser Asn Pro Leu
155             160             165             170

gag aaa gaa cga att cag aat gca ggt ggc tct gta atg att cag cgt   1001
Glu Lys Glu Arg Ile Gln Asn Ala Gly Gly Ser Val Met Ile Gln Arg
                175             180             185

gtg aat ggc tct ctg gct gta tcg agg gcc ctt ggg gat ttt gat tac   1049
Val Asn Gly Ser Leu Ala Val Ser Arg Ala Leu Gly Asp Phe Asp Tyr
                190             195             200

aaa tgt gtc cat gga aaa ggt cct act gag cag ctt gtc tca cca gag   1097
Lys Cys Val His Gly Lys Gly Pro Thr Glu Gln Leu Val Ser Pro Glu
                205             210             215

cct gaa gtc cat gat att gaa aga tct gaa gaa gat gat cag ttc att   1145
Pro Glu Val His Asp Ile Glu Arg Ser Glu Glu Asp Asp Gln Phe Ile
                220             225             230

atc ctt gca tgt gat ggt atc tgg gat gtt atg gga aat gaa gag ctc   1193
Ile Leu Ala Cys Asp Gly Ile Trp Asp Val Met Gly Asn Glu Glu Leu
235             240             245             250

tgt gat ttt gta aga tcc aga ctt gaa gtc act gat gac ctt gag aaa   1241
Cys Asp Phe Val Arg Ser Arg Leu Glu Val Thr Asp Asp Leu Glu Lys
                255             260             265

gtt tgc aat gaa gta gtc gac acc tgt ttg tat aag gga agt cga gac   1289
Val Cys Asn Glu Val Val Asp Thr Cys Leu Tyr Lys Gly Ser Arg Asp
                270             275             280

aac atg agt gtg att ttg atc tgt ttt cca aat gca ccc aaa gta tcg   1337
Asn Met Ser Val Ile Leu Ile Cys Phe Pro Asn Ala Pro Lys Val Ser
                285             290             295

cca gaa gca gtg aag aag gag gca gag ttg gac aag tac ctg gaa tgc   1385
Pro Glu Ala Val Lys Lys Glu Ala Glu Leu Asp Lys Tyr Leu Glu Cys
                300             305             310

aga gta gaa gaa atc ata aag aag cag ggg gaa ggc gtc ccc gac tta   1433
Arg Val Glu Glu Ile Ile Lys Lys Gln Gly Glu Gly Val Pro Asp Leu
315             320             325             330

gtc cat gtg atg cgc aca tta gcg agt gag aac atc ccc agc ctc cca   1481
Val His Val Met Arg Thr Leu Ala Ser Glu Asn Ile Pro Ser Leu Pro
                335             340             345

cca ggg ggt gaa ttg gca agc aag agg aat gtt att gaa gcc gtt tac   1529
Pro Gly Gly Glu Leu Ala Ser Lys Arg Asn Val Ile Glu Ala Val Tyr
                350             355             360

aat aga ctg aat cct tac aaa aat gac gac act gac tct aca tca aca   1577
Asn Arg Leu Asn Pro Tyr Lys Asn Asp Asp Thr Asp Ser Thr Ser Thr
```

254

```
              365                   370                   375
gat gat atg tgg taaaactgct catctagcca tggagtttac cttcacctcc        1629
Asp Asp Met Trp
    380

aaaggagagt acagctcaac tttgttgaaa cttttaacat ccatcctcaa ctttaaggaa 1689

ggggatatga catgggtgag aatgattaca tcagagaact tcagcagtac aacagctagc 1749

ccagaactga tttttttttt ttttttgtaa atttgagact tatgtaagcg tgatttcaaa 1809

ccataattcg tgttgtaaat cagactccag caatttttgt tgtatgattt tgtttttttg 1869

taaagtgtaa ttgtccttgt acaaaatgct catatttaat tatgaactgc tttaaatcac 1929

tatcaaagtt acaagaaatg tttggcttat tgtgtgatgc aacagatata tagccctttc 1989

aagtcatgtt gtgtttggac ttgggggttgg aacagggaga gcagcagcca tgtcagctac 2049

acgctcaaat gtgcagatga ttatggaaaa taacctcaaa atcttacaaa gctgaacatc 2109

caaggagtta ttgaaaacta tcttaaatgt tcttggtagg ggagttggca ttgttgataa 2169

agccagtccc ttcatttaac tgtctttcag gatgttcctt cgttgtttcc atgagtattg 2229

caggtaataa tacagtgtat tcataagaat ctcaatcttg gggctaaatg ccttgtttct 2289

ttgcacctct tttcaagtcc ttacatttaa ttactaattg ataagcagca gcttcctaca 2349

tatagtagga aactgccaca tttttgctat catgattggc tgggcctgct gctgttccta 2409

gtaagatatt ctgaattcca ttttatcaat aaagcttgat ttaacaaaca agaaactt    2467
```

<210> 137
<211> 358
<212> PRT
<213> Homo sapiens

<400> 137

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Met Met Gln Arg Val Phe Arg Gly Lys Leu Leu Ser Asn Asp Glu Val
1                   5                   10                  15

Thr Ile Lys Tyr Lys Asp Glu Asp Gly Asp Leu Ile Thr Ile Phe Asp
                20                  25                  30

Ser Ser Asp Leu Ser Phe Ala Ile Gln Cys Ser Arg Ile Leu Lys Leu
            35                  40                  45

Thr Leu Phe Val Asn Gly Gln Pro Arg Pro Leu Glu Ser Ser Gln Val
        50                  55                  60

Lys Tyr Leu Arg Arg Glu Leu Ile Glu Leu Arg Asn Lys Val Asn Arg
65                  70                  75                  80

Leu Leu Asp Ser Leu Glu Pro Pro Gly Glu Pro Gly Pro Ser Thr Asn
```

255

```
                      85                      90                      95

Ile Pro Glu Asn Asp Thr Val Asp Gly Arg Glu Glu Lys Ser Ala Ser
            100                 105                 110

Asp Ser Ser Gly Lys Gln Ser Thr Gln Val Met Ala Ala Ser Met Ser
            115                 120                 125

Ala Phe Asp Pro Leu Lys Asn Gln Asp Glu Ile Asn Lys Asn Val Met
    130                 135                 140

Ser Ala Phe Gly Leu Thr Asp Asp Gln Val Ser Gly Pro Pro Ser Ala
145                 150                 155                 160

Pro Ala Glu Asp Arg Ser Gly Thr Pro Asp Ser Ile Ala Ser Ser Ser
                165                 170                 175

Ser Ala Ala His Pro Pro Gly Val Gln Pro Gln Gln Pro Pro Tyr Thr
                180                 185                 190

Gly Ala Gln Thr Gln Ala Gly Gln Met Tyr Gln Gln Tyr Gln Gln Gln
            195                 200                 205

Ala Gly Tyr Gly Ala Gln Gln Pro Gln Ala Pro Pro Gln Gln Pro Gln
    210                 215                 220

Gln Tyr Gly Ile Gln Tyr Ser Ala Ser Tyr Ser Gln Gln Thr Gly Pro
225                 230                 235                 240

Gln Gln Pro Gln Gln Phe Gln Gly Tyr Gly Gln Gln Pro Thr Ser Gln
                245                 250                 255

Ala Pro Ala Pro Ala Phe Ser Gly Gln Pro Gln Gln Leu Pro Ala Gln
                260                 265                 270

Pro Pro Gln Gln Tyr Gln Ala Ser Asn Tyr Pro Ala Gln Thr Tyr Thr
                275                 280                 285

Ala Gln Thr Ser Gln Pro Thr Asn Tyr Thr Val Ala Pro Ala Ser Gln
    290                 295                 300

Pro Gly Met Ala Pro Ser Gln Pro Gly Ala Tyr Gln Pro Arg Pro Gly
305                 310                 315                 320

Phe Thr Ser Leu Pro Gly Ser Thr Met Thr Pro Pro Pro Ser Gly Pro
                325                 330                 335

Asn Pro Tyr Ala Arg Asn Arg Pro Pro Phe Gly Gln Gly Tyr Thr Gln
            340                 345                 350

Pro Gly Pro Gly Tyr Arg
            355
```

<210> 138
<211> 1519
<212> DNA

256

<213> Homo sapiens

<220>
<221> CDS
<222> (11)..(1084)

<400> 138
attagtgcta atg atg caa cga gtt ttc aga gga aaa ctt ctg agt aat   49
         Met Met Gln Arg Val Phe Arg Gly Lys Leu Leu Ser Asn
          1   5   10

gat gaa gta aca ata aag tat aaa gat gaa gat gga gat ctt ata aca   97
Asp Glu Val Thr Ile Lys Tyr Lys Asp Glu Asp Gly Asp Leu Ile Thr
     15   20   25

att ttt gat agt tct gac ctt tcc ttt gca att cag tgc agt agg ata   145
Ile Phe Asp Ser Ser Asp Leu Ser Phe Ala Ile Gln Cys Ser Arg Ile
 30   35   40   45

ctg aaa ctg aca tta ttt gtt aat ggc cag cca aga ccc ctt gaa tca   193
Leu Lys Leu Thr Leu Phe Val Asn Gly Gln Pro Arg Pro Leu Glu Ser
                 50   55   60

agt cag gtg aaa tat ctc cgt cga gaa ctg ata gaa ctt cga aat aaa   241
Ser Gln Val Lys Tyr Leu Arg Arg Glu Leu Ile Glu Leu Arg Asn Lys
             65   70   75

gtg aat cgt tta ttg gat agc ttg gaa cca cct gga gaa cca gga cct   289
Val Asn Arg Leu Leu Asp Ser Leu Glu Pro Pro Gly Glu Pro Gly Pro
             80   85   90

tcc acc aat att cct gaa aat gat act gtg gat ggt agg gaa gaa aag   337
Ser Thr Asn Ile Pro Glu Asn Asp Thr Val Asp Gly Arg Glu Glu Lys
         95   100   105

tct gct tct gat tct tct gga aaa cag tct act cag gtt atg gca gca   385
Ser Ala Ser Asp Ser Ser Gly Lys Gln Ser Thr Gln Val Met Ala Ala
110   115   120   125

agt atg tct gct ttt gat cct tta aaa aac caa gat gaa atc aat aaa   433
Ser Met Ser Ala Phe Asp Pro Leu Lys Asn Gln Asp Glu Ile Asn Lys
                 130   135   140

aat gtt atg tca gcg ttt ggc tta aca gat gat cag gtt tca ggg cca   481
Asn Val Met Ser Ala Phe Gly Leu Thr Asp Asp Gln Val Ser Gly Pro
             145   150   155

ccc agt gct cct gca gaa gat cgt tca gga aca ccc gac agc att gct   529
Pro Ser Ala Pro Ala Glu Asp Arg Ser Gly Thr Pro Asp Ser Ile Ala
         160   165   170

tcc tcc tcc tca gca gct cac cca cca ggc gtt cag cca cag cag cca   577
Ser Ser Ser Ser Ala Ala His Pro Pro Gly Val Gln Pro Gln Gln Pro
     175   180   185

cca tat aca gga gct cag act caa gca ggt cag atg tac caa cag tac   625
Pro Tyr Thr Gly Ala Gln Thr Gln Ala Gly Gln Met Tyr Gln Gln Tyr

257

```
          190                195                 200                205
cag caa cag gcc ggc tat ggt gca cag cag ccg cag gct cca cct cag   673
Gln Gln Gln Ala Gly Tyr Gly Ala Gln Gln Pro Gln Ala Pro Pro Gln
                    210                 215                 220

cag cct caa cag tat ggt att cag tat tca gca agc tat agt cag cag   721
Gln Pro Gln Gln Tyr Gly Ile Gln Tyr Ser Ala Ser Tyr Ser Gln Gln
                225                 230                 235

act gga ccc caa caa cct cag cag ttc cag gga tat ggc cag caa cca   769
Thr Gly Pro Gln Gln Pro Gln Gln Phe Gln Gly Tyr Gly Gln Gln Pro
                240                 245                 250

act tcc cag gca cca gct cct gcc ttt tct ggt cag cct caa caa ctg   817
Thr Ser Gln Ala Pro Ala Pro Ala Phe Ser Gly Gln Pro Gln Gln Leu
        255                 260                 265

cct gct cag ccg cca cag cag tac cag gcg agc aat tat cct gca caa   865
Pro Ala Gln Pro Pro Gln Gln Tyr Gln Ala Ser Asn Tyr Pro Ala Gln
270                 275                 280                 285

act tac act gcc caa act tct cag cct act aat tat act gtg gct cct   913
Thr Tyr Thr Ala Gln Thr Ser Gln Pro Thr Asn Tyr Thr Val Ala Pro
                290                 295                 300

gcc tct caa cct gga atg gct cca agc caa cct ggg gcc tat caa cca   961
Ala Ser Gln Pro Gly Met Ala Pro Ser Gln Pro Gly Ala Tyr Gln Pro
                305                 310                 315

aga cca ggt ttt act tca ctt cct gga agt acc atg acc cct cct cca   1009
Arg Pro Gly Phe Thr Ser Leu Pro Gly Ser Thr Met Thr Pro Pro Pro
                320                 325                 330

agt ggg cct aat cct tat gcg cgt aac cgt cct ccc ttt ggt cag ggc   1057
Ser Gly Pro Asn Pro Tyr Ala Arg Asn Arg Pro Pro Phe Gly Gln Gly
        335                 340                 345

tat acc caa cct gga cct ggt tat cga taaggaggct cctctacacc         1104
Tyr Thr Gln Pro Gly Pro Gly Tyr Arg
350                 355

aattaatgta gctgctagct attggcctcc caaaagactc cagtactatt ttaatttgta 1164

ttgaagaagt tcagaaattt aaaagcagag catttttttat gatatcattg ttggtgttaa 1224

ttgaaagtat aatttgctgg aacacaaaga ccaaaatgaa agttttttcc tccctgctta 1284

aaaatgtagc agcttcttag ttactttgga acactactct tacatgtata aagtgattga 1344

cttgactttc tagcttccct tgtccggagg atattaaaat gctagggtga ggtttagcca 1404

tcttacttgg ctttttacta ttaacatgat gtactaaagt agagcccttt gagaatacaa 1464

gatattatgt ataaaatgta acactgatga taggttaata aagatgattg aatcc         1519
```

258

<210> 139
<211> 396
<212> PRT
<213> Homo sapiens

<400> 139
Met Asn Gly Gln Leu Asp Leu Ser Gly Lys Leu Ile Val Lys Ala Gln
 1   5   10   15

Leu Gly Glu Asp Ile Arg Arg Ile Pro Ile His Asn Glu Asp Ile Thr
                20   25   30

Tyr Asp Glu Leu Val Leu Met Met Gln Arg Val Phe Arg Gly Lys Leu
             35   40   45

Leu Ser Asn Asp Glu Val Thr Ile Lys Tyr Lys Asp Glu Asp Gly Asp
         50   55   60

Leu Ile Thr Ile Phe Asp Ser Ser Asp Leu Ser Phe Ala Ile Gln Cys
 65   70   75   80

Ser Arg Ile Leu Lys Leu Thr Leu Phe Val Asn Gly Gln Pro Arg Pro
                 85   90   95

Leu Glu Ser Ser Gln Val Lys Tyr Leu Arg Arg Glu Leu Ile Glu Leu
             100   105   110

Arg Asn Lys Val Asn Arg Leu Leu Asp Ser Leu Glu Pro Pro Gly Glu
         115   120   125

Pro Gly Pro Ser Thr Asn Ile Pro Glu Asn Asp Thr Val Asp Gly Arg
     130   135   140

Glu Glu Lys Ser Ala Ser Asp Ser Ser Gly Lys Gln Ser Thr Gln Val
145   150   155   160

Met Ala Ala Ser Met Ser Ala Phe Asp Pro Leu Lys Asn Gln Asp Glu
                 165   170   175

Ile Asn Lys Asn Val Met Ser Ala Phe Gly Leu Thr Asp Asp Gln Val
         180   185   190

Ser Gly Pro Pro Ser Ala Pro Ala Glu Asp Arg Ser Gly Thr Pro Asp
         195   200   205

Ser Ile Ala Ser Ser Ser Ser Ala Ala His Pro Pro Gly Val Gln Pro
     210   215   220

Gln Gln Pro Pro Tyr Thr Gly Ala Gln Thr Gln Ala Gly Gln Met Tyr
225   230   235   240

Gln Gln Tyr Gln Gln Gln Ala Gly Tyr Gly Ala Gln Gln Pro Gln Ala
             245   250   255

Pro Pro Gln Gln Pro Gln Gln Tyr Gly Ile Gln Tyr Ser Ala Ser Tyr
         260   265   270

259

```
Ser Gln Gln Thr Gly Pro Gln Gln Pro Gln Gln Phe Gln Gly Tyr Gly
        275             280             285
```

```
Gln Gln Pro Thr Ser Gln Ala Pro Ala Pro Ala Phe Ser Gly Gln Pro
        290             295             300
```

```
Gln Gln Leu Pro Ala Gln Pro Pro Gln Gln Tyr Gln Ala Ser Asn Tyr
305             310             315             320
```

```
Pro Ala Gln Thr Tyr Thr Ala Gln Thr Ser Gln Pro Thr Asn Tyr Thr
            325             330             335
```

```
Val Ala Pro Ala Ser Gln Pro Gly Met Ala Pro Ser Gln Pro Gly Ala
            340             345             350
```

```
Tyr Gln Pro Arg Pro Gly Phe Thr Ser Leu Pro Gly Ser Thr Met Thr
            355             360             365
```

```
Pro Pro Pro Ser Gly Pro Asn Pro Tyr Ala Arg Asn Arg Pro Pro Phe
        370             375             380
```

```
Gly Gln Gly Tyr Thr Gln Pro Gly Pro Gly Tyr Arg
385             390             395
```


```
<210> 140
<211> 1641
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (19)..(1206)

<400> 140
aacatcctgg agtccacc atg aac gga cag ttg gat cta agt ggg aag cta      51
                    Met Asn Gly Gln Leu Asp Leu Ser Gly Lys Leu
                     1               5                  10

atc gtc aaa gct caa ctt ggg gag gat att cgg cga att cct att cat      99
Ile Val Lys Ala Gln Leu Gly Glu Asp Ile Arg Arg Ile Pro Ile His
             15              20                  25

aat gaa gat att act tat gat gaa tta gtg cta atg atg caa cga gtt     147
Asn Glu Asp Ile Thr Tyr Asp Glu Leu Val Leu Met Met Gln Arg Val
         30              35              40

ttc aga gga aaa ctt ctg agt aat gat gaa gta aca ata aag tat aaa     195
Phe Arg Gly Lys Leu Leu Ser Asn Asp Glu Val Thr Ile Lys Tyr Lys
     45              50              55

gat gaa gat gga gat ctt ata aca att ttt gat agt tct gac ctt tcc     243
Asp Glu Asp Gly Asp Leu Ile Thr Ile Phe Asp Ser Ser Asp Leu Ser
 60              65              70              75

ttt gca att cag tgc agt agg ata ctg aaa ctg aca tta ttt gtt aat     291
Phe Ala Ile Gln Cys Ser Arg Ile Leu Lys Leu Thr Leu Phe Val Asn
```

260

```
                  80                        85                          90
ggc cag cca aga ccc ctt gaa tca agt cag gtg aaa tat ctc cgt cga    339
Gly Gln Pro Arg Pro Leu Glu Ser Ser Gln Val Lys Tyr Leu Arg Arg
            95                    100                   105

gaa ctg ata gaa ctt cga aat aaa gtg aat cgt tta ttg gat agc ttg    387
Glu Leu Ile Glu Leu Arg Asn Lys Val Asn Arg Leu Leu Asp Ser Leu
        110                   115                   120

gaa cca cct gga gaa cca gga cct tcc acc aat att cct gaa aat gat    435
Glu Pro Pro Gly Glu Pro Gly Pro Ser Thr Asn Ile Pro Glu Asn Asp
        125                   130                   135

act gtg gat ggt agg gaa gaa aag tct gct tct gat tct tct gga aaa    483
Thr Val Asp Gly Arg Glu Glu Lys Ser Ala Ser Asp Ser Ser Gly Lys
140                   145                   150                   155

cag tct act cag gtt atg gca gca agt atg tct gct ttt gat cct tta    531
Gln Ser Thr Gln Val Met Ala Ala Ser Met Ser Ala Phe Asp Pro Leu
                160                   165                   170

aaa aac caa gat gaa atc aat aaa aat gtt atg tca gcg ttt ggc tta    579
Lys Asn Gln Asp Glu Ile Asn Lys Asn Val Met Ser Ala Phe Gly Leu
                175                   180                   185

aca gat gat cag gtt tca ggg cca ccc agt gct cct gca gaa gat cgt    627
Thr Asp Asp Gln Val Ser Gly Pro Pro Ser Ala Pro Ala Glu Asp Arg
            190                   195                   200

tca gga aca ccc gac agc att gct tcc tcc tcc tca gca gct cac cca    675
Ser Gly Thr Pro Asp Ser Ile Ala Ser Ser Ser Ser Ala Ala His Pro
            205                   210                   215

cca ggc gtt cag cca cag cag cca cca tat aca gga gct cag act caa    723
Pro Gly Val Gln Pro Gln Gln Pro Pro Tyr Thr Gly Ala Gln Thr Gln
220                   225                   230                   235

gca ggt cag atg tac caa cag tac cag caa cag gcc ggc tat ggt gca    771
Ala Gly Gln Met Tyr Gln Gln Tyr Gln Gln Gln Ala Gly Tyr Gly Ala
                240                   245                   250

cag cag ccg cag gct cca cct cag cag cct caa cag tat ggt att cag    819
Gln Gln Pro Gln Ala Pro Pro Gln Gln Pro Gln Gln Tyr Gly Ile Gln
                255                   260                   265

tat tca gca agc tat agt cag cag act gga ccc caa caa cct cag cag    867
Tyr Ser Ala Ser Tyr Ser Gln Gln Thr Gly Pro Gln Gln Pro Gln Gln
                270                   275                   280

ttc cag gga tat ggc cag caa cca act tcc cag gca cca gct cct gcc    915
Phe Gln Gly Tyr Gly Gln Gln Pro Thr Ser Gln Ala Pro Ala Pro Ala
        285                   290                   295

ttt tct ggt cag cct caa caa ctg cct gct cag ccg cca cag cag tac    963
Phe Ser Gly Gln Pro Gln Gln Leu Pro Ala Gln Pro Pro Gln Gln Tyr
300                   305                   310                   315
```

261

```
cag gcg agc aat tat cct gca caa act tac act gcc caa act tct cag   1011
Gln Ala Ser Asn Tyr Pro Ala Gln Thr Tyr Thr Ala Gln Thr Ser Gln
            320                 325                 330

cct act aat tat act gtg gct cct gcc tct caa cct gga atg gct cca   1059
Pro Thr Asn Tyr Thr Val Ala Pro Ala Ser Gln Pro Gly Met Ala Pro
            335                 340                 345

agc caa cct ggg gcc tat caa cca aga cca ggt ttt act tca ctt cct   1107
Ser Gln Pro Gly Ala Tyr Gln Pro Arg Pro Gly Phe Thr Ser Leu Pro
            350                 355                 360

gga agt acc atg acc cct cct cca agt ggg cct aat cct tat gcg cgt   1155
Gly Ser Thr Met Thr Pro Pro Pro Ser Gly Pro Asn Pro Tyr Ala Arg
        365                 370                 375

aac cgt cct ccc ttt ggt cag ggc tat acc caa cct gga cct ggt tat   1203
Asn Arg Pro Pro Phe Gly Gln Gly Tyr Thr Gln Pro Gly Pro Gly Tyr
380                 385                 390                 395

cga taaggaggct cctctacacc aattaatgta gctgctagct attggcctcc        1256
Arg

caaaagactc cagtactatt ttaatttgta ttgaagaagt tcagaaattt aaaagcagag 1316

catttttttat gatatcattg ttggtgttaa ttgaaagtat aatttgctgg aacacaaaga 1376

ccaaaatgaa agttttttcc tccctgctta aaaatgtagc agcttcttag ttactttgga 1436

acactactct tacatgtata aagtgattga cttgactttc tagcttccct tgtccggagg 1496

atattaaaat gctagggtga ggtttagcca tcttacttgg ctttttacta ttaacatgat 1556

gtactaaagt agagcccttt gagaatacaa gatattatgt ataaaatgta acactgatga 1616

taggttaata aagatgattg aatcc                                       1641
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<210> 141
<211> 323
<212> PRT
<213> Homo sapiens

<400> 141
Met Ala Phe Ser Gly Ser Gln Ala Pro Tyr Leu Ser Pro Ala Val Pro
  1               5                  10                  15

Phe Ser Gly Thr Ile Gln Gly Gly Leu Gln Asp Gly Leu Gln Ile Thr
            20                  25                  30

Val Asn Gly Thr Val Leu Ser Ser Ser Gly Thr Arg Phe Ala Val Asn
            35                  40                  45

Phe Gln Thr Gly Phe Ser Gly Asn Asp Ile Ala Phe His Phe Asn Pro
    50                  55                  60
```

262

Arg Phe Glu Asp Gly Gly Tyr Val Val Cys Asn Thr Arg Gln Asn Gly
65   70   75   80

Ser Trp Gly Pro Glu Glu Arg Lys Thr His Met Pro Phe Gln Lys Gly
                85   90   95

Met Pro Phe Asp Leu Cys Phe Leu Val Gln Ser Ser Asp Phe Lys Val
                100   105   110

Met Val Asn Gly Ile Leu Phe Val Gln Tyr Phe His Arg Val Pro Phe
                115   120   125

His Arg Val Asp Thr Ile Ser Val Asn Gly Ser Val Gln Leu Ser Tyr
                130   135   140

Ile Ser Phe Gln Pro Pro Gly Val Trp Pro Ala Asn Pro Ala Pro Ile
145   150   155   160

Thr Gln Thr Val Ile His Thr Val Gln Ser Ala Pro Gly Gln Met Phe
                165   170   175

Ser Thr Pro Ala Ile Pro Pro Met Met Tyr Pro His Pro Ala Tyr Pro
                180   185   190

Met Pro Phe Ile Thr Thr Ile Leu Gly Gly Leu Tyr Pro Ser Lys Ser
                195   200   205

Ile Leu Leu Ser Gly Thr Val Leu Pro Ser Ala Gln Arg Phe His Ile
210   215   220

Asn Leu Cys Ser Gly Asn His Ile Ala Phe His Leu Asn Pro Arg Phe
225   230   235   240

Asp Glu Asn Ala Val Val Arg Asn Thr Gln Ile Asp Asn Ser Trp Gly
                245   250   255

Ser Glu Glu Arg Ser Leu Pro Arg Lys Met Pro Phe Val Arg Gly Gln
                260   265   270

Ser Phe Ser Val Trp Ile Leu Cys Glu Ala His Cys Leu Lys Val Ala
                275   280   285

Val Asp Gly Gln His Leu Phe Glu Tyr Tyr His Arg Leu Arg Asn Leu
                290   295   300

Pro Thr Ile Asn Arg Leu Glu Val Gly Gly Asp Ile Gln Leu Thr His
305   310   315   320

Val Gln Thr

<210> 142
<211> 1616
<212> DNA
<213> Homo sapiens

263

<220>
<221> CDS
<222> (72)..(1040)

<400> 142
aagtcgttcc ctctacaaag gacttcctag tgggtgtgaa aggcagcggt ggccacagag 60

gcggcggaga g atg gcc ttc agc ggt tcc cag gct ccc tac ctg agt cca   110
           Met Ala Phe Ser Gly Ser Gln Ala Pro Tyr Leu Ser Pro
            1   5   10

gct gtc ccc ttt tct ggg act att caa gga ggt ctc cag gac gga ctt   158
Ala Val Pro Phe Ser Gly Thr Ile Gln Gly Gly Leu Gln Asp Gly Leu
    15   20   25

cag atc act gtc aat ggg acc gtt ctc agc tcc agt gga acc agg ttt   206
Gln Ile Thr Val Asn Gly Thr Val Leu Ser Ser Ser Gly Thr Arg Phe
  30   35   40   45

gct gtg aac ttt cag act ggc ttc agt gga aat gac att gcc ttc cac   254
Ala Val Asn Phe Gln Thr Gly Phe Ser Gly Asn Asp Ile Ala Phe His
             50   55   60

ttc aac cct cgg ttt gaa gat gga ggg tac gtg gtg tgc aac acg agg   302
Phe Asn Pro Arg Phe Glu Asp Gly Gly Tyr Val Val Cys Asn Thr Arg
             65   70   75

cag aac gga agc tgg ggg ccc gag gag agg aag aca cac atg cct ttc   350
Gln Asn Gly Ser Trp Gly Pro Glu Glu Arg Lys Thr His Met Pro Phe
         80   85   90

cag aag ggg atg ccc ttt gac ctc tgc ttc ctg gtg cag agc tca gat   398
Gln Lys Gly Met Pro Phe Asp Leu Cys Phe Leu Val Gln Ser Ser Asp
    95   100   105

ttc aag gtg atg gtg aac ggg atc ctc ttc gtg cag tac ttc cac cgc   446
Phe Lys Val Met Val Asn Gly Ile Leu Phe Val Gln Tyr Phe His Arg
110   115   120   125

gtg ccc ttc cac cgt gtg gac acc atc tcc gtc aat ggc tct gtg cag   494
Val Pro Phe His Arg Val Asp Thr Ile Ser Val Asn Gly Ser Val Gln
             130   135   140

ctg tcc tac atc agc ttc cag cct ccc ggc gtg tgg cct gcc aac ccg   542
Leu Ser Tyr Ile Ser Phe Gln Pro Pro Gly Val Trp Pro Ala Asn Pro
           145   150   155

gct ccc att acc cag aca gtc atc cac aca gtg cag agc gcc cct gga   590
Ala Pro Ile Thr Gln Thr Val Ile His Thr Val Gln Ser Ala Pro Gly
          160   165   170

cag atg ttc tct act ccc gcc atc cca cct atg atg tac ccc cac ccc   638
Gln Met Phe Ser Thr Pro Ala Ile Pro Pro Met Met Tyr Pro His Pro
    175   180   185

gcc tat ccg atg cct ttc atc acc acc att ctg gga ggg ctg tac cca   686
Ala Tyr Pro Met Pro Phe Ile Thr Thr Ile Leu Gly Gly Leu Tyr Pro

264

```
              190                    195                    200                    205
tcc aag tcc atc ctc ctg tca ggc act gtc ctg ccc agt gct cag agg   734
Ser Lys Ser Ile Leu Leu Ser Gly Thr Val Leu Pro Ser Ala Gln Arg
                210                    215                    220

ttc cac atc aac ctg tgc tct ggg aac cac atc gcc ttc cac ctg aac   782
Phe His Ile Asn Leu Cys Ser Gly Asn His Ile Ala Phe His Leu Asn
                225                    230                    235

ccc cgt ttt gat gag aat gct gtg gtc cgc aac acc cag atc gac aac   830
Pro Arg Phe Asp Glu Asn Ala Val Val Arg Asn Thr Gln Ile Asp Asn
                240                    245                    250

tcc tgg ggg tct gag gag cga agt ctg ccc cga aaa atg ccc ttc gtc   878
Ser Trp Gly Ser Glu Glu Arg Ser Leu Pro Arg Lys Met Pro Phe Val
        255                    260                    265

cgt ggc cag agc ttc tca gtg tgg atc ttg tgt gaa gct cac tgc ctc   926
Arg Gly Gln Ser Phe Ser Val Trp Ile Leu Cys Glu Ala His Cys Leu
270                    275                    280                    285

aag gtg gcc gtg gat ggt cag cac ctg ttt gaa tac tac cat cgc ctg   974
Lys Val Ala Val Asp Gly Gln His Leu Phe Glu Tyr Tyr His Arg Leu
                290                    295                    300

agg aac ctg ccc acc atc aac aga ctg gaa gtg ggg ggc gac atc cag   1022
Arg Asn Leu Pro Thr Ile Asn Arg Leu Glu Val Gly Gly Asp Ile Gln
                305                    310                    315

ctg acc cat gtg cag aca taggcggctt cctggccctg gggccggggg   1070
Leu Thr His Val Gln Thr
        320

ctggggtgtg gggcagtctg ggtcctctca tcatccccac ttcccaggcc cagcctttcc 1130

aaccctgcct gggatctggg ctttaatgca gaggccatgt ccttgtctgg tcctgcttct 1190

ggctacagcc accctggaac ggagaaggca gctgacgggg attgccttcc tcagccgcag 1250

cagcacctgg ggctccagct gctggaatcc taccatccca ggaggcaggc acagccaggg 1310

agaggggagg agtgggcagt gaagatgaag ccccatgctc agtcccctcc catcccccac 1370

gcagctccac cccagtccca agccaccagc tgtctgctcc tggtgggagg tggcctcctc 1430

agcccctcct ctctgacctt taacctcact ctcaccttgc accgtgcacc aacccttcac 1490

ccctcctgga aagcaggcct gatggcttcc cactggcctc caccacctga ccagagtgtt 1550

ctcttcagag gactggctcc tttcccagtg tccttaaaat aaagaaatga aaatgcttgt 1610

tggcac   1616
```

<210> 143
<211> 136

265

<212> PRT
<213> Homo sapiens

<400> 143
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Met Ala Gly Ala Ile Ile Glu Asn Met Ser Thr Lys Lys Leu Cys Ile
 1               5                  10                  15

Val Gly Gly Ile Leu Leu Val Phe Gln Ile Ile Ala Phe Leu Val Gly
            20                  25                  30

Gly Leu Ile Ala Pro Gly Pro Thr Thr Ala Val Ser Tyr Met Ser Val
         35                  40                  45

Lys Cys Val Asp Ala Arg Lys Asn His His Lys Thr Lys Trp Phe Val
     50                  55                  60

Pro Trp Gly Pro Asn His Cys Asp Lys Ile Arg Asp Ile Glu Glu Ala
 65                  70                  75                  80

Ile Pro Arg Glu Ile Glu Ala Asn Asp Ile Val Phe Ser Val His Ile
                85                  90                  95

Pro Leu Pro His Met Ala Leu Ser Cys Gly Phe Leu Asp Gln Arg His
            100                 105                 110

Gly His Leu Ser Val Cys Leu Leu Thr Val Ala Phe Gly Gly Arg Phe
        115                 120                 125

Leu Gln Pro Leu Met His Cys Val
    130                 135
```

<210> 144
<211> 1252
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (225)..(632)

<400> 144
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acaatcacag ctccgggcat tgggggaacc cgagccggct gcgccggggg aatccgtgcg 60

ggcgccttcc gtcccggtcc catcctcgcc gcgctccagc acctctgaag ttttgcagcg 120

cccagaaagg aggcgaggaa ggagggagtg tgtgagagga gggagcaaaa agctcaccct 180

aaaacattta tttcaaggag aaaagaaaaa ggggggcgc aaaa atg gct ggg gca  236
                                            Met Ala Gly Ala
                                             1

att ata gaa aac atg agc acc aag aag ctg tgc att gtt ggt ggg att  284
Ile Ile Glu Asn Met Ser Thr Lys Lys Leu Cys Ile Val Gly Gly Ile
 5                  10                  15                  20

ctg ctc gtg ttc caa atc atc gcc ttt ctg gtg gga ggc ttg att gct  332
```
```
266
```

```
Leu Leu Val Phe Gln Ile Ile Ala Phe Leu Val Gly Gly Leu Ile Ala
                25                  30                  35

cca ggg ccc aca acg gca gtg tcc tac atg tcg gtg aaa tgt gtg gat   380
Pro Gly Pro Thr Thr Ala Val Ser Tyr Met Ser Val Lys Cys Val Asp
            40                  45                  50

gcc cgt aag aac cat cac aag aca aaa tgg ttc gtg cct tgg gga ccc   428
Ala Arg Lys Asn His His Lys Thr Lys Trp Phe Val Pro Trp Gly Pro
            55                  60                  65

aat cat tgt gac aag atc cga gac att gaa gag gca att cca agg gaa   476
Asn His Cys Asp Lys Ile Arg Asp Ile Glu Glu Ala Ile Pro Arg Glu
        70                  75                  80

att gaa gcc aat gac atc gtg ttt tct gtt cac att ccc ctc ccc cac   524
Ile Glu Ala Asn Asp Ile Val Phe Ser Val His Ile Pro Leu Pro His
 85                  90                  95                  100

atg gct ctt agc tgt ggt ttc ttg gac cag cgg cat gga cat ttg tca   572
Met Ala Leu Ser Cys Gly Phe Leu Asp Gln Arg His Gly His Leu Ser
                105                 110                 115

gtt tgc ctt ctg acg gta gct ttt gga gga aga ttc ctg cag cca cta   620
Val Cys Leu Leu Thr Val Ala Phe Gly Gly Arg Phe Leu Gln Pro Leu
                120                 125                 130

atg cat tgt gta tgataacaaa aactctggta tgacacattt tctgtgatca      672
Met His Cys Val
            135

ttgttaatta gtgacatagt aacatctgta gcagctggtt agtaaacctc atgtggggt 732

ggggtggggg tgtattcctt gggggatggt ttgggccgaa tggggagtgg aatatttgac 792

atttttcctg ttttaaattc taggatagat tttaacatcc tttgcggtcc cagtccaagg 852

taggctggtg tcatagtctt ctcactccta atccatgacc actgtttttt tcctatttat 912

atcaccaggt agcctactga gttaatattt aagttgtcaa tagataagtg tccctgtttt 972

gtggcataat ataactgaat ttcatgagaa gatttattcc accaggggta tttcagcttt 1032

gaaaccaaat ctgtgtatct aatactaacc aatctgttgg atgtgggttt taaaaaatgt 1092

ttgctaaact acccaagtaa gatttactgt attaaatggc cttcgggtct gaaaagcttt 1152

tttaacctct tgcttaaaat gcgttttatt ttgataagat acttcaaata gcctccaaaa 1212

gtgtagatcc aatcacttaa ataaacctgt atgtatatgc                      1252
```

<210> 145
<211> 468
<212> PRT
<213> Homo sapiens

267

<400> 145

```
Met Pro Val Arg Thr Ile Thr Arg Gln Asn Gly Ser Cys Leu Gly Asp
 1               5                  10                  15

Pro Ile Ile Val Thr Arg Ser Glu Thr Leu Lys Arg Gln Phe Gln Phe
            20                  25                  30

Met Leu Phe Ile Leu Gln Leu Asp Ile Ala Phe Lys Leu Asn Asn Gln
            35                  40                  45

Ile Arg Glu Asn Ala Glu Val Ser Met Asp Val Ser Leu Ala Tyr Arg
        50                  55                  60

Asp Asp Ala Phe Ala Glu Trp Thr Glu Met Ala His Glu Arg Val Pro
65                  70                  75                  80

Arg Lys Leu Lys Cys Thr Phe Thr Ser Pro Lys Thr Pro Glu His Glu
                85                  90                  95

Gly Arg Tyr Tyr Glu Cys Asp Val Leu Pro Phe Met Glu Ile Gly Ser
            100                 105                 110

Val Ala His Lys Phe Tyr Leu Leu Asn Ile Arg Leu Pro Val Asn Glu
            115                 120                 125

Lys Lys Lys Ile Asn Val Gly Ile Gly Glu Ile Lys Asp Ile Arg Leu
    130                 135                 140

Val Gly Ile His Gln Asn Gly Gly Phe Thr Lys Val Trp Phe Ala Met
145                 150                 155                 160

Lys Thr Phe Leu Thr Pro Ser Ile Phe Ile Ile Met Val Trp Tyr Trp
                165                 170                 175

Arg Arg Ile Thr Met Met Ser Arg Pro Pro Val Leu Leu Glu Lys Val
                180                 185                 190

Ile Phe Ala Leu Gly Ile Ser Met Thr Phe Ile Asn Ile Pro Val Glu
            195                 200                 205

Trp Phe Ser Ile Gly Phe Asp Trp Thr Trp Met Leu Leu Phe Gly Asp
    210                 215                 220

Ile Arg Gln Gly Ile Phe Tyr Ala Met Leu Leu Ser Phe Trp Ile Ile
225                 230                 235                 240

Phe Cys Gly Glu His Met Met Asp Gln His Glu Arg Asn His Ile Ala
            245                 250                 255

Gly Tyr Trp Lys Gln Val Gly Pro Ile Ala Val Gly Ser Phe Cys Leu
            260                 265                 270

Phe Ile Phe Asp Met Cys Glu Arg Gly Val Gln Leu Thr Asn Pro Phe
            275                 280                 285

Tyr Ser Ile Trp Thr Thr Asp Ile Gly Thr Glu Leu Ala Met Ala Phe
    290                 295                 300
```

268

```
Ile Ile Val Ala Gly Ile Cys Leu Cys Leu Tyr Phe Leu Phe Leu Cys
305             310             315             320

Phe Met Val Phe Gln Val Phe Arg Asn Ile Ser Gly Lys Gln Ser Ser
            325             330             335

Leu Pro Ala Met Ser Lys Val Arg Arg Leu His Tyr Glu Gly Leu Ile
            340             345             350

Phe Arg Phe Lys Phe Leu Met Leu Ile Thr Leu Ala Cys Ala Ala Met
        355             360             365

Thr Val Ile Phe Phe Ile Val Ser Gln Val Thr Glu Gly His Trp Lys
    370             375             380

Trp Gly Gly Val Thr Val Gln Val Asn Ser Ala Phe Phe Thr Gly Ile
385             390             395             400

Tyr Gly Met Trp Asn Leu Tyr Val Phe Ala Leu Met Phe Leu Tyr Ala
            405             410             415

Pro Ser His Lys Asn Tyr Gly Glu Asp Gln Ser Asn Gly Met Gln Leu
            420             425             430

Pro Cys Lys Ser Arg Glu Asp Cys Ala Leu Phe Val Ser Glu Leu Tyr
            435             440             445

Gln Glu Leu Phe Ser Ala Ser Lys Tyr Ser Phe Ile Asn Asp Asn Ala
    450             455             460

Ala Ser Gly Ile
465


<210> 146
<211> 1943
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (379)..(1782)

<400> 146
acaatcacag ctccgggcat tggggggaacc cgagccggct gcgccggggg aatccgtgcg 60

ggcgccttcc gtcccggtcc catcctcgcc gcgctccagc acctctgaag ttttgcagcg 120

cccagaaagg aggcgaggaa ggagggagtg tgtgagagga gggagcaaaa agctcaccct 180

aaaacattta tttcaaggag aaaagaaaaa gggggggcgc aaaaatggct ggggcaatta 240

tagaaaacat gagcaccaag aagctgtgca ttgttggtgg gattctgctc gtgttccaaa 300

tcatcgcctt tctggtggga ggcttgattg ctccagggcc cacaacggca gtgtcctaca 360
```

269

```
tgtcggtgaa atgtgtgg atg ccc gta aga acc atc aca aga caa aat ggt     411
                       Met Pro Val Arg Thr Ile Thr Arg Gln Asn Gly
                        1                5                  10

tcg tgc ctt ggg gac cca atc att gtg aca aga tcc gag aca ttg aag     459
Ser Cys Leu Gly Asp Pro Ile Ile Val Thr Arg Ser Glu Thr Leu Lys
             15                  20                  25

agg caa ttc caa ttc atg ctg ttt atc ctg cag ctg gac att gcc ttc     507
Arg Gln Phe Gln Phe Met Leu Phe Ile Leu Gln Leu Asp Ile Ala Phe
         30                  35                  40

aag cta aac aac caa atc aga gaa aat gca gaa gtc tcc atg gac gtt     555
Lys Leu Asn Asn Gln Ile Arg Glu Asn Ala Glu Val Ser Met Asp Val
     45                  50                  55

tcc ctg gct tac cgt gat gac gcg ttt gct gag tgg act gaa atg gcc     603
Ser Leu Ala Tyr Arg Asp Asp Ala Phe Ala Glu Trp Thr Glu Met Ala
60                  65                  70                  75

cat gaa aga gta cca cgg aaa ctc aaa tgc acc ttc aca tct ccc aag     651
His Glu Arg Val Pro Arg Lys Leu Lys Cys Thr Phe Thr Ser Pro Lys
                 80                  85                  90

act cca gag cat gag ggc cgt tac tat gaa tgt gat gtc ctt cct ttc     699
Thr Pro Glu His Glu Gly Arg Tyr Tyr Glu Cys Asp Val Leu Pro Phe
             95                  100                 105

atg gaa att ggg tct gtg gcc cat aag ttt tac ctt tta aac atc cgg     747
Met Glu Ile Gly Ser Val Ala His Lys Phe Tyr Leu Leu Asn Ile Arg
             110                 115                 120

ctg cct gtg aat gag aag aag aaa atc aat gtg gga att ggg gag ata     795
Leu Pro Val Asn Glu Lys Lys Lys Ile Asn Val Gly Ile Gly Glu Ile
     125                 130                 135

aag gat atc cgg ttg gtg ggg atc cac caa aat gga ggc ttc acc aag     843
Lys Asp Ile Arg Leu Val Gly Ile His Gln Asn Gly Gly Phe Thr Lys
140                 145                 150                 155

gtg tgg ttt gcc atg aag acc ttc ctt acg ccc agc atc ttc atc att     891
Val Trp Phe Ala Met Lys Thr Phe Leu Thr Pro Ser Ile Phe Ile Ile
             160                 165                 170

atg gtg tgg tat tgg agg agg atc acc atg atg tcc cga ccc cca gtg     939
Met Val Trp Tyr Trp Arg Arg Ile Thr Met Met Ser Arg Pro Pro Val
             175                 180                 185

ctt ctg gaa aaa gtc atc ttt gcc ctt ggg att tcc atg acc ttt atc     987
Leu Leu Glu Lys Val Ile Phe Ala Leu Gly Ile Ser Met Thr Phe Ile
             190                 195                 200

aat atc cca gtg gaa tgg ttt tcc atc ggg ttt gac tgg acc tgg atg     1035
Asn Ile Pro Val Glu Trp Phe Ser Ile Gly Phe Asp Trp Thr Trp Met
     205                 210                 215

ctg ctg ttt ggt gac atc cga cag ggc atc ttc tat gcg atg ctt ctg     1083
```

270

```
Leu Leu Phe Gly Asp Ile Arg Gln Gly Ile Phe Tyr Ala Met Leu Leu
220             225             230             235

tcc ttc tgg atc atc ttc tgt ggc gag cac atg atg gat cag cac gag    1131
Ser Phe Trp Ile Ile Phe Cys Gly Glu His Met Met Asp Gln His Glu
            240             245             250

cgg aac cac atc gca ggg tat tgg aag caa gtc gga ccc att gcc gtt    1179
Arg Asn His Ile Ala Gly Tyr Trp Lys Gln Val Gly Pro Ile Ala Val
            255             260             265

ggc tcc ttc tgc ctc ttc ata ttt gac atg tgt gag aga ggg gta caa    1227
Gly Ser Phe Cys Leu Phe Ile Phe Asp Met Cys Glu Arg Gly Val Gln
            270             275             280

ctc acg aat ccc ttc tac agt atc tgg act aca gac att gga aca gag    1275
Leu Thr Asn Pro Phe Tyr Ser Ile Trp Thr Thr Asp Ile Gly Thr Glu
            285             290             295

ctg gcc atg gcc ttc atc atc gtg gct gga atc tgc ctc tgc ctc tac    1323
Leu Ala Met Ala Phe Ile Ile Val Ala Gly Ile Cys Leu Cys Leu Tyr
300             305             310             315

ttc ctg ttt cta tgc ttc atg gta ttt cag gtg ttt cgg aac atc agt    1371
Phe Leu Phe Leu Cys Phe Met Val Phe Gln Val Phe Arg Asn Ile Ser
            320             325             330

ggg aag cag tcc agc ctg cca gct atg agc aaa gtc cgg cgg cta cac    1419
Gly Lys Gln Ser Ser Leu Pro Ala Met Ser Lys Val Arg Arg Leu His
            335             340             345

tat gag ggg cta att ttt agg ttc aag ttc ctc atg ctt atc acc ttg    1467
Tyr Glu Gly Leu Ile Phe Arg Phe Lys Phe Leu Met Leu Ile Thr Leu
            350             355             360

gcc tgc gct gcc atg act gtc atc ttc ttc atc gtt agt cag gta acg    1515
Ala Cys Ala Ala Met Thr Val Ile Phe Phe Ile Val Ser Gln Val Thr
365             370             375

gaa ggc cat tgg aaa tgg ggc ggc gtc aca gtc caa gtg aac agt gcc    1563
Glu Gly His Trp Lys Trp Gly Gly Val Thr Val Gln Val Asn Ser Ala
380             385             390             395

ttt ttc aca ggc atc tat ggg atg tgg aat ctg tat gtc ttt gct ctg    1611
Phe Phe Thr Gly Ile Tyr Gly Met Trp Asn Leu Tyr Val Phe Ala Leu
            400             405             410

atg ttc ttg tat gca cca tcc cat aaa aac tat gga gaa gac cag tcc    1659
Met Phe Leu Tyr Ala Pro Ser His Lys Asn Tyr Gly Glu Asp Gln Ser
            415             420             425

aat gga atg caa ctc cca tgt aaa tcg agg gaa gat tgt gct ttg ttt    1707
Asn Gly Met Gln Leu Pro Cys Lys Ser Arg Glu Asp Cys Ala Leu Phe
            430             435             440

gtt tcg gaa ctt tat caa gaa ttg ttc agc gct tcg aaa tat tcc ttc    1755
Val Ser Glu Leu Tyr Gln Glu Leu Phe Ser Ala Ser Lys Tyr Ser Phe
```

271

```
             445                    450                    455
atc aat gac aac gca gct tct ggt att tgagtcaaca aggcaacaca      1802
Ile Asn Asp Asn Ala Ala Ser Gly Ile
460                    465

tgtttatcag ctttgcattt gcagttgtca cagtcacatt gattgtactt gtatacgcac 1862

acaaatacac tcatttagcc tttatctcaa aatgttaaat ataaggaaaa aagcgtcaac 1922

aataaatatt ctttgagtat t                                         1943
```

<210> 147
<211> 460
<212> PRT
<213> Homo sapiens

<400> 147
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Met Pro Val Arg Thr Ile Thr Arg Gln Asn Gly Ser Cys Leu Gly Asp
  1               5                  10                  15

Pro Ile Ile Val Thr Arg Ser Glu Thr Leu Lys Arg Gln Phe Gln Gly
               20                  25                  30

Lys Leu Lys Pro Met Thr Ser Cys Phe Leu Phe Thr Phe Pro Ser Pro
           35                  40                  45

Met Asp Val Ser Leu Ala Tyr Arg Asp Asp Ala Phe Ala Glu Trp Thr
       50                  55                  60

Glu Met Ala His Glu Arg Val Pro Arg Lys Leu Lys Cys Thr Phe Thr
 65                  70                  75                  80

Ser Pro Lys Thr Pro Glu His Glu Gly Arg Tyr Tyr Glu Cys Asp Val
               85                  90                  95

Leu Pro Phe Met Glu Ile Gly Ser Val Ala His Lys Phe Tyr Leu Leu
              100                 105                 110

Asn Ile Arg Leu Pro Val Asn Glu Lys Lys Lys Ile Asn Val Gly Ile
              115                 120                 125

Gly Glu Ile Lys Asp Ile Arg Leu Val Gly Ile His Gln Asn Gly Gly
      130                 135                 140

Phe Thr Lys Val Trp Phe Ala Met Lys Thr Phe Leu Thr Pro Ser Ile
145                 150                 155                 160

Phe Ile Ile Met Val Trp Tyr Trp Arg Arg Ile Thr Met Met Ser Arg
              165                 170                 175

Pro Pro Val Leu Leu Glu Lys Val Ile Phe Ala Leu Gly Ile Ser Met
              180                 185                 190

Thr Phe Ile Asn Ile Pro Val Glu Trp Phe Ser Ile Gly Phe Asp Trp
              195                 200                 205
```

272

```
Thr Trp Met Leu Leu Phe Gly Asp Ile Arg Gln Gly Ile Phe Tyr Ala
    210                 215                 220

Met Leu Leu Ser Phe Trp Ile Ile Phe Cys Gly Glu His Met Met Asp
225                 230                 235                 240

Gln His Glu Arg Asn His Ile Ala Gly Tyr Trp Lys Gln Val Gly Pro
                245                 250                 255

Ile Ala Val Gly Ser Phe Cys Leu Phe Ile Phe Asp Met Cys Glu Arg
                260                 265                 270

Gly Val Gln Leu Thr Asn Pro Phe Tyr Ser Ile Trp Thr Thr Asp Ile
                275                 280                 285

Gly Thr Glu Leu Ala Met Ala Phe Ile Ile Val Ala Gly Ile Cys Leu
    290                 295                 300

Cys Leu Tyr Phe Leu Phe Leu Cys Phe Met Val Phe Gln Val Phe Arg
305                 310                 315                 320

Asn Ile Ser Gly Lys Gln Ser Ser Leu Pro Ala Met Ser Lys Val Arg
                325                 330                 335

Arg Leu His Tyr Glu Gly Leu Ile Phe Arg Phe Lys Phe Leu Met Leu
                340                 345                 350

Ile Thr Leu Ala Cys Ala Ala Met Thr Val Ile Phe Phe Ile Val Ser
                355                 360                 365

Gln Val Thr Glu Gly His Trp Lys Trp Gly Gly Ile Thr Val Gln Val
    370                 375                 380

Asn Ser Ala Phe Phe Thr Gly Ile Tyr Gly Met Trp Asn Leu Tyr Val
385                 390                 395                 400

Phe Ala Leu Met Phe Leu Tyr Ala Pro Ser His Lys Asn Tyr Gly Glu
                405                 410                 415

Asp Gln Ser Asn Gly Met Gln Leu Pro Cys Lys Ser Arg Glu Asp Cys
                420                 425                 430

Ala Leu Phe Val Ser Glu Leu Tyr Gln Glu Leu Phe Ser Ala Ser Lys
                435                 440                 445

Tyr Ser Phe Ile Asn Asp Asn Ala Ala Ser Gly Ile
    450                 455                 460
```

<210> 148
<211> 1919
<212> DNA
<213> Homo sapiens

<220>
<221> CDS

273

<222> (376)..(1755)

<400> 148

```
atcacagctc cgggcattgg gggaacccga gccggctgcg ccggggggaat ccgtgcgggc  60

gccttccgtc ccggtcccat cctcgccgcg ctccagcacc tctgaagttt tgcagcgccc  120

agaaaggagg cgaggaagga gggagtgtat gagaggaggg agcaaaaagc tcaccctaaa  180

acatttattt caaggagaaa agaaaaaggg ggggcgcaaa aatggctggg gcaattatag  240

aaaacatgag caccaagaag ctgtgcattg ttggtgggat tctgctcgtg ttccaaatca  300

tcgcctttct ggtgggaggc ttgattgctc cagggcccac aacggcagtg tcctacatgt  360
```

```
cggtgaaatg tgtgg atg ccc gta aga acc atc aca aga caa aat ggt tcg  411
               Met Pro Val Arg Thr Ile Thr Arg Gln Asn Gly Ser
                1                   5                   10
```

```
tgc ctt ggg gac cca atc att gtg aca aga tcc gag aca ttg aag agg  459
Cys Leu Gly Asp Pro Ile Ile Val Thr Arg Ser Glu Thr Leu Lys Arg
         15                  20                  25
```

```
caa ttc caa ggg aaa ttg aag cca atg aca tcg tgt ttt ctg ttc aca  507
Gln Phe Gln Gly Lys Leu Lys Pro Met Thr Ser Cys Phe Leu Phe Thr
     30                  35                  40
```

```
ttc ccc tcc ccc atg gac gtt tcc ctg gct tac cgt gat gac gcg ttt  555
Phe Pro Ser Pro Met Asp Val Ser Leu Ala Tyr Arg Asp Asp Ala Phe
 45                  50                  55                  60
```

```
gct gag tgg act gaa atg gcc cat gaa aga gta cca cgg aaa ctc aaa  603
Ala Glu Trp Thr Glu Met Ala His Glu Arg Val Pro Arg Lys Leu Lys
                 65                  70                  75
```

```
tgc acc ttc aca tct ccc aag act cca gag cat gag ggc cgt tac tat  651
Cys Thr Phe Thr Ser Pro Lys Thr Pro Glu His Glu Gly Arg Tyr Tyr
             80                  85                  90
```

```
gaa tgt gat gtc ctt cct ttc atg gaa att ggg tct gtg gcc cat aag  699
Glu Cys Asp Val Leu Pro Phe Met Glu Ile Gly Ser Val Ala His Lys
         95                  100                 105
```

```
ttt tac ctt tta aac atc cgg ctg cct gtg aat gag aag aag aaa atc  747
Phe Tyr Leu Leu Asn Ile Arg Leu Pro Val Asn Glu Lys Lys Lys Ile
     110                 115                 120
```

```
aat gtg gga att ggg gag ata aag gat atc cgg ttg gtg ggg atc cac  795
Asn Val Gly Ile Gly Glu Ile Lys Asp Ile Arg Leu Val Gly Ile His
125                 130                 135                 140
```

```
caa aat gga ggc ttc acc aag gtg tgg ttt gcc atg aag acc ttc ctt  843
Gln Asn Gly Gly Phe Thr Lys Val Trp Phe Ala Met Lys Thr Phe Leu
                 145                 150                 155
```

```
acg ccc agc atc ttc atc att atg gtg tgg tat tgg agg agg atc acc  891
Thr Pro Ser Ile Phe Ile Ile Met Val Trp Tyr Trp Arg Arg Ile Thr
```

274

```
                    160                    165                    170

atg atg tcc cga ccc cca gtg ctt ctg gaa aaa gtc atc ttt gcc ctt   939
Met Met Ser Arg Pro Pro Val Leu Leu Glu Lys Val Ile Phe Ala Leu
        175                 180                 185

ggg att tcc atg acc ttt atc aat atc cca gtg gaa tgg ttt tcc atc   987
Gly Ile Ser Met Thr Phe Ile Asn Ile Pro Val Glu Trp Phe Ser Ile
        190                 195                 200

ggg ttt gac tgg acc tgg atg ctg ctg ttt ggt gac atc cga cag ggc  1035
Gly Phe Asp Trp Thr Trp Met Leu Leu Phe Gly Asp Ile Arg Gln Gly
205                 210                 215                 220

atc ttc tat gcg atg ctt ctg tcc ttc tgg atc atc ttc tgt ggc gag  1083
Ile Phe Tyr Ala Met Leu Leu Ser Phe Trp Ile Ile Phe Cys Gly Glu
                225                 230                 235

cac atg atg gat cag cac gag cgg aac cac atc gca ggg tat tgg aag  1131
His Met Met Asp Gln His Glu Arg Asn His Ile Ala Gly Tyr Trp Lys
                240                 245                 250

caa gtc gga ccc att gcc gtt ggc tcc ttc tgc ctc ttc ata ttt gac  1179
Gln Val Gly Pro Ile Ala Val Gly Ser Phe Cys Leu Phe Ile Phe Asp
                255                 260                 265

atg tgt gag aga ggg gta caa ctc acg aat ccc ttc tac agt atc tgg  1227
Met Cys Glu Arg Gly Val Gln Leu Thr Asn Pro Phe Tyr Ser Ile Trp
        270                 275                 280

act aca gac att gga aca gag ctg gcc atg gcc ttc atc atc gtg gct  1275
Thr Thr Asp Ile Gly Thr Glu Leu Ala Met Ala Phe Ile Ile Val Ala
285                 290                 295                 300

gga atc tgc ctc tgc ctc tac ttc ctg ttt cta tgc ttc atg gta ttt  1323
Gly Ile Cys Leu Cys Leu Tyr Phe Leu Phe Leu Cys Phe Met Val Phe
                305                 310                 315

cag gtg ttt cgg aac atc agt ggg aag cag tcc agc ctg cca gct atg  1371
Gln Val Phe Arg Asn Ile Ser Gly Lys Gln Ser Ser Leu Pro Ala Met
                320                 325                 330

agc aaa gtc cgg cgg cta cac tat gag ggg cta att ttt agg ttc aag  1419
Ser Lys Val Arg Arg Leu His Tyr Glu Gly Leu Ile Phe Arg Phe Lys
                335                 340                 345

ttc ctc atg ctt atc acc ttg gcc tgc gct gcc atg act gtc atc ttc  1467
Phe Leu Met Leu Ile Thr Leu Ala Cys Ala Ala Met Thr Val Ile Phe
                350                 355                 360

ttc atc gtt agt cag gta acg gaa ggc cat tgg aaa tgg ggc ggc atc  1515
Phe Ile Val Ser Gln Val Thr Glu Gly His Trp Lys Trp Gly Gly Ile
365                 370                 375                 380

aca gtc caa gtg aac agt gcc ttt ttc aca ggc atc tat ggg atg tgg  1563
Thr Val Gln Val Asn Ser Ala Phe Phe Thr Gly Ile Tyr Gly Met Trp
                385                 390                 395
```

275

```
aat ctg tat gtc ttt gct ctg atg ttc ttg tat gca cca tcc cat aaa   1611
Asn Leu Tyr Val Phe Ala Leu Met Phe Leu Tyr Ala Pro Ser His Lys
            400                 405                 410

aac tat gga gaa gac cag tcc aat gga atg caa ctc cca tgt aaa tcg   1659
Asn Tyr Gly Glu Asp Gln Ser Asn Gly Met Gln Leu Pro Cys Lys Ser
            415                 420                 425

agg gaa gat tgt gct ttg ttt gtt tcg gaa ctt tat caa gaa ttg ttc   1707
Arg Glu Asp Cys Ala Leu Phe Val Ser Glu Leu Tyr Gln Glu Leu Phe
            430                 435                 440

agc gct tcg aaa tat tcc ttc atc aat gac aac gca gct tct ggt att   1755
Ser Ala Ser Lys Tyr Ser Phe Ile Asn Asp Asn Ala Ala Ser Gly Ile
445                 450                 455                 460

tgagtcaaca aggcaacaca tgtttatcag ctttgcattt gcagttgtca cagtcacatt   1815

gattgtactt gtatacgcac acaaatacac tcatttagcc tttatctcaa aatgttaaat   1875

ataaggaaaa aagcgtcaac aataaatatt ctttgagtat tgtc                    1919
```

```
<210> 149
<211> 183
<212> PRT
<213> Homo sapiens

<400> 149
Met Lys Leu Leu Ser Leu Val Ala Val Val Gly Cys Leu Leu Val Pro
 1               5                   10                  15

Pro Ala Glu Ala Asn Lys Ser Ser Glu Asp Ile Arg Cys Lys Cys Ile
            20                  25                  30

Cys Pro Pro Tyr Arg Asn Ile Ser Gly His Ile Tyr Asn Gln Asn Val
            35                  40                  45

Ser Gln Lys Asp Cys Asn Cys Leu His Val Val Glu Pro Met Pro Val
        50                  55                  60

Pro Gly His Asp Val Glu Ala Tyr Cys Leu Leu Cys Glu Cys Arg Tyr
65                  70                  75                  80

Glu Glu Arg Ser Thr Thr Thr Ile Lys Val Ile Ile Val Ile Tyr Leu
                85                  90                  95

Ser Val Val Gly Ala Leu Leu Leu Tyr Met Ala Phe Leu Met Leu Val
            100                 105                 110

Asp Pro Leu Ile Arg Lys Pro Asp Ala Tyr Thr Glu Gln Leu His Asn
            115                 120                 125

Glu Glu Glu Asn Glu Asp Ala Arg Ser Met Ala Ala Ala Ala Ala Ser
        130                 135                 140
```

276

```
Leu Gly Gly Pro Arg Ala Asn Thr Val Leu Glu Arg Val Glu Gly Ala
145                 150                 155                 160

Gln Gln Arg Trp Lys Leu Gln Val Gln Glu Gln Arg Lys Thr Val Phe
                165                 170                 175

Asp Arg His Lys Met Leu Ser
                180
```

```
<210> 150
<211> 1562
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (120)..(668)

<400> 150
tacggctgcg agaagacgac agaagggggat taagagggag ggcgggggaca actgggtctt 60

ttgcggctgc agcgggcttg taggtgtccg gctttgctgg cccagcaagc ctgataagc 119

atg aag ctc tta tct ttg gtg gct gtg gtc ggg tgt ttg ctg gtg ccc    167
Met Lys Leu Leu Ser Leu Val Ala Val Val Gly Cys Leu Leu Val Pro
 1               5                  10                  15

cca gct gaa gcc aac aag agt tct gaa gat atc cgg tgc aaa tgc atc    215
Pro Ala Glu Ala Asn Lys Ser Ser Glu Asp Ile Arg Cys Lys Cys Ile
             20                  25                  30

tgt cca cct tat aga aac atc agt ggg cac att tac aac cag aat gta    263
Cys Pro Pro Tyr Arg Asn Ile Ser Gly His Ile Tyr Asn Gln Asn Val
         35                  40                  45

tcc cag aag gac tgc aac tgc ctg cac gtg gtg gag ccc atg cca gtg    311
Ser Gln Lys Asp Cys Asn Cys Leu His Val Val Glu Pro Met Pro Val
     50                  55                  60

cct ggc cat gac gtg gag gcc tac tgc ctg ctg tgc gag tgc agg tac    359
Pro Gly His Asp Val Glu Ala Tyr Cys Leu Leu Cys Glu Cys Arg Tyr
 65                  70                  75                  80

gag gag cgc agc acc acc acc atc aag gtc atc att gtc atc tac ctg    407
Glu Glu Arg Ser Thr Thr Thr Ile Lys Val Ile Ile Val Ile Tyr Leu
                 85                  90                  95

tcc gtg gtg ggt gcc ctg ttg ctc tac atg gcc ttc ctg atg ctg gtg    455
Ser Val Val Gly Ala Leu Leu Leu Tyr Met Ala Phe Leu Met Leu Val
                100                 105                 110

gac cct ctg atc cga aag ccg gat gca tat act gag caa ctg cac aat    503
Asp Pro Leu Ile Arg Lys Pro Asp Ala Tyr Thr Glu Gln Leu His Asn
            115                 120                 125

gag gag gag aat gag gat gct cgc tct atg gca gca gct gct gca tcc    551
```

277

```
Glu Glu Glu Asn Glu Asp Ala Arg Ser Met Ala Ala Ala Ala Ala Ser
    130             135                 140
```

```
ctc ggg gga ccc cga gca aac aca gtc ctg gag cgt gtg gaa ggt gcc    599
Leu Gly Gly Pro Arg Ala Asn Thr Val Leu Glu Arg Val Glu Gly Ala
145             150                 155                 160
```

```
cag cag cgg tgg aag ctg cag gtg cag gag cag cgg aag aca gtc ttc    647
Gln Gln Arg Trp Lys Leu Gln Val Gln Glu Gln Arg Lys Thr Val Phe
                165                 170                 175
```

```
gat cgg cac aag atg ctc agc tagatgggct ggtgtggttg ggtcaaggcc    698
Asp Arg His Lys Met Leu Ser
                180
```

```
ccaacaccat ggctgccagc ttccaggctg acaaagcag gggctactt ctcccttccc  758

tcggttccag tcttcccttt aaaagcctgt ggcattttc ctccttctcc ctaactttag  818

aaatgttgta cttggctatt ttgattaggg aagagggatg tggtctctga tctccgttgt  878

cttcttgggt ctttgggggtt gaagggaggg ggaaggcagg ccagaaggga atggagacat  938

tcgaggcggc ctcaggagtg gatgcgatct gtctctcctg gctccactct gccgccttc  998

cagctctgag tcttgggaat gttgttaccc ttggaagata aagctgggtc ttcaggaact  1058

cagtgtctgg gaggaaagca tggcccagca ttcagcatgt gttcctttct gcagtggttc  1118

tttatcacca cctccctccc agccccagcg cctcagcccc agccccagct ccagccctga  1178

ggacagctct gatgggagag ctgggccccc tgagcccact gggtcttcag ggtgcactgg  1238

aagctggtgt cgctgtccc ctgtgcactt ctcgcactgg ggcatggagt gcccatgcat  1298

actctgctgc cggtcccctc acctgcactt gagggtctg ggcagtccct cctctcccca  1358

gtgtccacag tcactgagcc agacggtcgg ttggaacatg agactcgagg ctgagcgtgg  1418

atctgaacac cacagccct gtacttgggt tgcctcttgt ccctgaactt cgttgtacca  1478

gtgcatggag agaaaatttt gtcctcttgt cttagagttg tgtgtaaatc aaggaagcca  1538

tcattaaatt gttttatttc tctc                                        1562
```

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<210> 151
<211> 2815
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (192)..(2387)

<400> 151
tctctcctcc tcctccagca gccaccaggg accgggagat ctaccagctc aagaccccta  60
```

278

cagccaggtc tgtgctgccg ccctccagca tctttgcagc aggggacgag gctgtgtggg 120

aggctgtcgg ttcggaacat gtctccaccc accccaccct ctgtggctcc aggcttcatt 180

ctcccccatc c atg gat aac cca ggg cct tcg ctc cgt ggt gcc ttt ggc 230
             Met Asp Asn Pro Gly Pro Ser Leu Arg Gly Ala Phe Gly
             1   5   10

att cta ggt gcc ttg gaa agg gac agg ctg acc cac ctg aaa cac aag 278
Ile Leu Gly Ala Leu Glu Arg Asp Arg Leu Thr His Leu Lys His Lys
     15   20   25

ctg ggg agt ctg tgt tca ggc agc cag gag tca aag ctt ctc cat gcc 326
Leu Gly Ser Leu Cys Ser Gly Ser Gln Glu Ser Lys Leu Leu His Ala
30   35   40   45

atg gta ctc ctg gct ctg ggc cag gac acg gag gcc agg gtc tct ctg 374
Met Val Leu Leu Ala Leu Gly Gln Asp Thr Glu Ala Arg Val Ser Leu
             50   55   60

gag tcc ttg aag atg aac aca gta gcc cag ctg gta gcc cac cag tgg 422
Glu Ser Leu Lys Met Asn Thr Val Ala Gln Leu Val Ala His Gln Trp
          65   70   75

gca gac atg gag acc aca gag ggc cct gag gag cct cca gac ttg tcc 470
Ala Asp Met Glu Thr Thr Glu Gly Pro Glu Glu Pro Pro Asp Leu Ser
         80   85   90

tgg acg gtg gct cgc ctg tac cac ctg ctg gct gag gag aac ctg tgt 518
Trp Thr Val Ala Arg Leu Tyr His Leu Leu Ala Glu Glu Asn Leu Cys
     95   100   105

ccg gcc tct aca agg gac atg gct tac cag gtg gcc ctt cgt gac ttt 566
Pro Ala Ser Thr Arg Asp Met Ala Tyr Gln Val Ala Leu Arg Asp Phe
110   115   120   125

gcc tcc cag ggt gac cac cag ctg ggc caa ctc cag aat gag gcc tgg 614
Ala Ser Gln Gly Asp His Gln Leu Gly Gln Leu Gln Asn Glu Ala Trp
             130   135   140

gat cgg tgc agt tca gat atc aag ggg gac ccc agt ggt ttc cag cca 662
Asp Arg Cys Ser Ser Asp Ile Lys Gly Asp Pro Ser Gly Phe Gln Pro
             145   150   155

ctc cat tct cat cag ggt tcc ctg cag cca cct tca gca tcc cct gca 710
Leu His Ser His Gln Gly Ser Leu Gln Pro Pro Ser Ala Ser Pro Ala
          160   165   170

gtg acc aga agc cag cct cgt ccc att gac aca cca gac tgg agt tgg 758
Val Thr Arg Ser Gln Pro Arg Pro Ile Asp Thr Pro Asp Trp Ser Trp
     175   180   185

gga cat acg tta cac tcc acc aac agc act gcc tca ctg gcc agc cac 806
Gly His Thr Leu His Ser Thr Asn Ser Thr Ala Ser Leu Ala Ser His
190   195   200   205

```
cta gag atc agc cag tca ccc act ctt gcc ttt ctc tct tca cac cat    854
Leu Glu Ile Ser Gln Ser Pro Thr Leu Ala Phe Leu Ser Ser His His
            210             215                 220

gga acc cat ggg ccc agc aag cta tgt aac aca ccg ctg gac act cag    902
Gly Thr His Gly Pro Ser Lys Leu Cys Asn Thr Pro Leu Asp Thr Gln
            225             230                 235

gag cct cag ctt gtc cct gaa ggc tgc caa gaa cct gag gag ata agc    950
Glu Pro Gln Leu Val Pro Glu Gly Cys Gln Glu Pro Glu Glu Ile Ser
            240             245                 250

tgg cct cca tca gtg gag acc agt gtc tcc tta ggg tta cca cac gaa    998
Trp Pro Pro Ser Val Glu Thr Ser Val Ser Leu Gly Leu Pro His Glu
            255             260                 265

att agc gtt cca gag gtg tct cca gag gag gct tcg ccc atc ctc cct   1046
Ile Ser Val Pro Glu Val Ser Pro Glu Glu Ala Ser Pro Ile Leu Pro
270             275                 280                 285

gac gcc ctg gct gct cca gac aca agt gtc cac tgt ccc att gaa tgc   1094
Asp Ala Leu Ala Ala Pro Asp Thr Ser Val His Cys Pro Ile Glu Cys
                290                 295                 300

aca gag ttg tct aca aac tcc agg tct ccc ctg acg tcc acc aca gaa   1142
Thr Glu Leu Ser Thr Asn Ser Arg Ser Pro Leu Thr Ser Thr Thr Glu
            305                 310                 315

agt gtt gga aag cag tgg cct att aca agt cag agg tca cct cag gtt   1190
Ser Val Gly Lys Gln Trp Pro Ile Thr Ser Gln Arg Ser Pro Gln Val
            320                 325                 330

cct gta gga gat gat tct ctg cag aac acc acg tca tcc agc cct cct   1238
Pro Val Gly Asp Asp Ser Leu Gln Asn Thr Thr Ser Ser Ser Pro Pro
            335                 340                 345

gcc cag cca cca tcc ctc caa gcc tcc cct aag ctg cct cct tcc cct   1286
Ala Gln Pro Pro Ser Leu Gln Ala Ser Pro Lys Leu Pro Pro Ser Pro
350                 355                 360                 365

ctg tcc tct gct tcc tcc ccg agc agc tac cct gct cct cca acc tcc   1334
Leu Ser Ser Ala Ser Ser Pro Ser Ser Tyr Pro Ala Pro Pro Thr Ser
                370                 375                 380

aca tcc cct gtt ttg gac cac tca gaa aca tct gat cag aaa ttc tat   1382
Thr Ser Pro Val Leu Asp His Ser Glu Thr Ser Asp Gln Lys Phe Tyr
            385                 390                 395

aac ttt gtg gtt atc cat gcc agg gct gat gaa cag gtg gcc cta cgt   1430
Asn Phe Val Val Ile His Ala Arg Ala Asp Glu Gln Val Ala Leu Arg
            400                 405                 410

att cgg gag aag ctg gag acc ctc ggg gta cct gac ggg gcc acc ttc   1478
Ile Arg Glu Lys Leu Glu Thr Leu Gly Val Pro Asp Gly Ala Thr Phe
415                 420                 425

tgt gag gaa ttt cag gtg ccc ggg cgt ggt gag ctg cac tgt ctc caa   1526
```

280

```
Cys Glu Glu Phe Gln Val Pro Gly Arg Gly Glu Leu His Cys Leu Gln
430                 435             440                 445

gat gcc atc gat cac tcg ggg ttc acg atc ctg ctc ctg act gct agc    1574
Asp Ala Ile Asp His Ser Gly Phe Thr Ile Leu Leu Leu Thr Ala Ser
                450             455                 460

ttt gat tgc agc ctg agc ctg cat caa atc aac cat gct ctc atg aac    1622
Phe Asp Cys Ser Leu Ser Leu His Gln Ile Asn His Ala Leu Met Asn
            465             470                 475

agc ctt aca cag tct ggg agg cag gac tgt gtg atc ccc ctc ctc cca    1670
Ser Leu Thr Gln Ser Gly Arg Gln Asp Cys Val Ile Pro Leu Leu Pro
            480             485                 490

ctt gag tgt tcc cag gcc cag ctc agc cca gat aca acc aga ctg ctc    1718
Leu Glu Cys Ser Gln Ala Gln Leu Ser Pro Asp Thr Thr Arg Leu Leu
        495             500             505

cac agc att gtg tgg ctg gat gaa cac tcc cca atc ttc gcc aga aag    1766
His Ser Ile Val Trp Leu Asp Glu His Ser Pro Ile Phe Ala Arg Lys
510             515             520             525

gtg gca aac acc ttc aag aca cag aag ctc cag gca cag cgg gta cgc    1814
Val Ala Asn Thr Phe Lys Thr Gln Lys Leu Gln Ala Gln Arg Val Arg
                530             535             540

tgg aag aaa gcg cag gag gcc aga acc ctc aag gag cag agc ata cag    1862
Trp Lys Lys Ala Gln Glu Ala Arg Thr Leu Lys Glu Gln Ser Ile Gln
            545             550             555

ctg gag gca gag cgg caa aac gtg gca gcc ata tct gct gcc tac aca    1910
Leu Glu Ala Glu Arg Gln Asn Val Ala Ala Ile Ser Ala Ala Tyr Thr
            560             565             570

gcc tat gtc cat agc tat agg gcc tgg caa gca gag atg aac aaa ctt    1958
Ala Tyr Val His Ser Tyr Arg Ala Trp Gln Ala Glu Met Asn Lys Leu
    575             580             585

ggg gtg gct ttt ggg aag aac ttg tca ctg ggg act cca aca ccc agc    2006
Gly Val Ala Phe Gly Lys Asn Leu Ser Leu Gly Thr Pro Thr Pro Ser
590             595             600             605

tgg ccc gga tgt cca cag cca ata cct tct cat cct cag ggt ggt act    2054
Trp Pro Gly Cys Pro Gln Pro Ile Pro Ser His Pro Gln Gly Gly Thr
            610             615             620

cca gtt ttc ccc tat tcc cca cag cct cca tcc ttc cct cag cct cca    2102
Pro Val Phe Pro Tyr Ser Pro Gln Pro Pro Ser Phe Pro Gln Pro Pro
            625             630             635

tgc ttc cct cag cct cca tcc ttc cct cag cct cca tcc ttc cca ctg    2150
Cys Phe Pro Gln Pro Pro Ser Phe Pro Gln Pro Pro Ser Phe Pro Leu
            640             645             650

cct cca gtc tct tcc cca cag tcc caa tcc ttt cca tca gcc tcc tcc    2198
Pro Pro Val Ser Ser Pro Gln Ser Gln Ser Phe Pro Ser Ala Ser Ser
```

281

```
          655                    660                    665
cca gcc cca cag act cca gga cct cag cct ctc att att cac cat gcc   2246
Pro Ala Pro Gln Thr Pro Gly Pro Gln Pro Leu Ile Ile His His Ala
670                    675                    680                    685

cag atg gtt cag ctg ggt gtc aac aat cac atg tgg ggc cac aca ggg   2294
Gln Met Val Gln Leu Gly Val Asn Asn His Met Trp Gly His Thr Gly
                        690                    695                    700

gcc cag tca tct gat gac aag act gag tgt tcg gag aac ccc tgt atg   2342
Ala Gln Ser Ser Asp Asp Lys Thr Glu Cys Ser Glu Asn Pro Cys Met
                705                    710                    715

ggc cct ctg act gat cag ggc gaa ccc ctt ctt gag act cca gag       2387
Gly Pro Leu Thr Asp Gln Gly Glu Pro Leu Leu Glu Thr Pro Glu
                720                    725                    730

tgaccaggtt ggaccccacc tagatggcta gagtgacaag attggacttc acctgggtcc   2447

ttaaaatgat agtggaggaa gggaacctcg cctgggtccc cagagtagcc agaggactta   2507

gcttgggctc ccacagtggc tattagttgg acccagcttg agaccccaga ggcagggaag   2567

accacaccta taaatcaggc ctgggaaaca tgcagaaacc ccatttgaac agactgtggg   2627

actccaatct gaatcctcta tgtggacaga ggatgatggg gccagaggca cctctgaggt   2687

gccctcagcg cagcctcgta aacttcattc actgtgacac atgctgttca tagggtctct   2747

ctggggagga tgcggtcccg gggcacatag ggagggtcct gtttttataa taaagttatt   2807

gacaactg                                                          2815
```

<210> 152
<211> 732
<212> PRT
<213> Homo sapiens

<400> 152

```
Met Asp Asn Pro Gly Pro Ser Leu Arg Gly Ala Phe Gly Ile Leu Gly
 1               5                    10                   15

Ala Leu Glu Arg Asp Arg Leu Thr His Leu Lys His Lys Leu Gly Ser
            20                   25                   30

Leu Cys Ser Gly Ser Gln Glu Ser Lys Leu Leu His Ala Met Val Leu
        35                   40                   45

Leu Ala Leu Gly Gln Asp Thr Glu Ala Arg Val Ser Leu Glu Ser Leu
    50                   55                   60

Lys Met Asn Thr Val Ala Gln Leu Val Ala His Gln Trp Ala Asp Met
65                   70                   75                   80

Glu Thr Thr Glu Gly Pro Glu Glu Pro Pro Asp Leu Ser Trp Thr Val
```

```
                    85                      90                      95

Ala Arg Leu Tyr His Leu Leu Ala Glu Glu Asn Leu Cys Pro Ala Ser
            100                 105                 110

Thr Arg Asp Met Ala Tyr Gln Val Ala Leu Arg Asp Phe Ala Ser Gln
            115                 120                 125

Gly Asp His Gln Leu Gly Gln Leu Gln Asn Glu Ala Trp Asp Arg Cys
    130                 135                 140

Ser Ser Asp Ile Lys Gly Asp Pro Ser Gly Phe Gln Pro Leu His Ser
145                 150                 155                 160

His Gln Gly Ser Leu Gln Pro Pro Ser Ala Ser Pro Ala Val Thr Arg
                165                 170                 175

Ser Gln Pro Arg Pro Ile Asp Thr Pro Asp Trp Ser Trp Gly His Thr
            180                 185                 190

Leu His Ser Thr Asn Ser Thr Ala Ser Leu Ala Ser His Leu Glu Ile
        195                 200                 205

Ser Gln Ser Pro Thr Leu Ala Phe Leu Ser Ser His His Gly Thr His
    210                 215                 220

Gly Pro Ser Lys Leu Cys Asn Thr Pro Leu Asp Thr Gln Glu Pro Gln
225                 230                 235                 240

Leu Val Pro Glu Gly Cys Gln Glu Pro Glu Glu Ile Ser Trp Pro Pro
            245                 250                 255

Ser Val Glu Thr Ser Val Ser Leu Gly Leu Pro His Glu Ile Ser Val
            260                 265                 270

Pro Glu Val Ser Pro Glu Glu Ala Ser Pro Ile Leu Pro Asp Ala Leu
            275                 280                 285

Ala Ala Pro Asp Thr Ser Val His Cys Pro Ile Glu Cys Thr Glu Leu
    290                 295                 300

Ser Thr Asn Ser Arg Ser Pro Leu Thr Ser Thr Thr Glu Ser Val Gly
305                 310                 315                 320

Lys Gln Trp Pro Ile Thr Ser Gln Arg Ser Pro Gln Val Pro Val Gly
            325                 330                 335

Asp Asp Ser Leu Gln Asn Thr Thr Ser Ser Ser Pro Pro Ala Gln Pro
            340                 345                 350

Pro Ser Leu Gln Ala Ser Pro Lys Leu Pro Pro Ser Pro Leu Ser Ser
            355                 360                 365

Ala Ser Ser Pro Ser Ser Tyr Pro Ala Pro Pro Thr Ser Thr Ser Pro
    370                 375                 380

Val Leu Asp His Ser Glu Thr Ser Asp Gln Lys Phe Tyr Asn Phe Val
```

283

```
385                    390                    395                    400
Val Ile His Ala Arg Ala Asp Glu Gln Val Ala Leu Arg Ile Arg Glu
            405                    410                    415

Lys Leu Glu Thr Leu Gly Val Pro Asp Gly Ala Thr Phe Cys Glu Glu
            420                    425                    430

Phe Gln Val Pro Gly Arg Gly Glu Leu His Cys Leu Gln Asp Ala Ile
            435                    440                    445

Asp His Ser Gly Phe Thr Ile Leu Leu Leu Thr Ala Ser Phe Asp Cys
    450                    455                    460

Ser Leu Ser Leu His Gln Ile Asn His Ala Leu Met Asn Ser Leu Thr
465                    470                    475                    480

Gln Ser Gly Arg Gln Asp Cys Val Ile Pro Leu Leu Pro Leu Glu Cys
            485                    490                    495

Ser Gln Ala Gln Leu Ser Pro Asp Thr Thr Arg Leu Leu His Ser Ile
            500                    505                    510

Val Trp Leu Asp Glu His Ser Pro Ile Phe Ala Arg Lys Val Ala Asn
            515                    520                    525

Thr Phe Lys Thr Gln Lys Leu Gln Ala Gln Arg Val Arg Trp Lys Lys
    530                    535                    540

Ala Gln Glu Ala Arg Thr Leu Lys Glu Gln Ser Ile Gln Leu Glu Ala
545                    550                    555                    560

Glu Arg Gln Asn Val Ala Ala Ile Ser Ala Ala Tyr Thr Ala Tyr Val
            565                    570                    575

His Ser Tyr Arg Ala Trp Gln Ala Glu Met Asn Lys Leu Gly Val Ala
            580                    585                    590

Phe Gly Lys Asn Leu Ser Leu Gly Thr Pro Thr Pro Ser Trp Pro Gly
            595                    600                    605

Cys Pro Gln Pro Ile Pro Ser His Pro Gln Gly Gly Thr Pro Val Phe
            610                    615                    620

Pro Tyr Ser Pro Gln Pro Pro Ser Phe Pro Gln Pro Pro Cys Phe Pro
625                    630                    635                    640

Gln Pro Pro Ser Phe Pro Gln Pro Pro Ser Phe Pro Leu Pro Pro Val
            645                    650                    655

Ser Ser Pro Gln Ser Gln Ser Phe Pro Ser Ala Ser Ser Pro Ala Pro
            660                    665                    670

Gln Thr Pro Gly Pro Gln Pro Leu Ile Ile His His Ala Gln Met Val
            675                    680                    685

Gln Leu Gly Val Asn Asn His Met Trp Gly His Thr Gly Ala Gln Ser
```

284

```
        690                    695                    700
Ser Asp Asp Lys Thr Glu Cys Ser Glu Asn Pro Cys Met Gly Pro Leu
705                      710                    715                    720

Thr Asp Gln Gly Glu Pro Leu Leu Glu Thr Pro Glu
                    725                    730
```

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<210> 153
<211> 2544
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (97)..(2232)

<400> 153
tagggacac tgggcgtgca gaaggcgggg ggcagtgtgg aacatgcctt caccacctcc 60

agcttctgct gccggaggct gcacccacct gtgccc atg gcc tgc aca ggc cca    114
                                         Met Ala Cys Thr Gly Pro
                                           1               5

tca ctt cct agc gcc ttc gac att cta ggt gca gca ggc cag gac aag    162
Ser Leu Pro Ser Ala Phe Asp Ile Leu Gly Ala Ala Gly Gln Asp Lys
              10                  15                  20

ctc ttg tat ctg aag cac aaa ctg aag acc cca cgc cca ggc tgc cag    210
Leu Leu Tyr Leu Lys His Lys Leu Lys Thr Pro Arg Pro Gly Cys Gln
          25                  30                  35

ggg cag gac ctc ctg cat gcc atg gtt ctc ctg aag ctg ggc cag gaa    258
Gly Gln Asp Leu Leu His Ala Met Val Leu Leu Lys Leu Gly Gln Glu
      40                  45                  50

act gag gcc agg atc tct cta gag gca ttg aag gcc gat gcg gtg gcc    306
Thr Glu Ala Arg Ile Ser Leu Glu Ala Leu Lys Ala Asp Ala Val Ala
 55                  60                  65                  70

cgg ctg gtg gcc cgc cag tgg gct ggc gtg gac agc acc gag gac cca    354
Arg Leu Val Ala Arg Gln Trp Ala Gly Val Asp Ser Thr Glu Asp Pro
                  75                  80                  85

gag gag ccc cca gat gtg tcc tgg gct gtg gcc cgc ttg tac cac ctg    402
Glu Glu Pro Pro Asp Val Ser Trp Ala Val Ala Arg Leu Tyr His Leu
              90                  95                  100

ctg gct gag gag aag ctg tgc ccc gcc tcg ctg cgg gac gtg gcc tac    450
Leu Ala Glu Glu Lys Leu Cys Pro Ala Ser Leu Arg Asp Val Ala Tyr
          105                 110                 115

cag gaa gcc gtc cgc acc ctc agc tcc agg gac gac cac cgg ctg ggg    498
Gln Glu Ala Val Arg Thr Leu Ser Ser Arg Asp Asp His Arg Leu Gly
      120                 125                 130
```

285

```
gaa ctt cag gat gag gcc cga aac cgg tgt ggg tgg gac att gct ggg    546
Glu Leu Gln Asp Glu Ala Arg Asn Arg Cys Gly Trp Asp Ile Ala Gly
135             140             145             150

gat cca ggg agc atc cgg acg ctc cag tcc aat ctg ggc tgc ctc cca    594
Asp Pro Gly Ser Ile Arg Thr Leu Gln Ser Asn Leu Gly Cys Leu Pro
                155             160             165

cca tcc tcg gct ttg ccc tct ggg acc agg agc ctc cca cgc ccc att    642
Pro Ser Ser Ala Leu Pro Ser Gly Thr Arg Ser Leu Pro Arg Pro Ile
            170             175             180

gac ggt gtt tcg gac tgg agc caa ggg tgc tcc ctg cga tcc act ggc    690
Asp Gly Val Ser Asp Trp Ser Gln Gly Cys Ser Leu Arg Ser Thr Gly
            185             190             195

agc cct gcc tcc ctg gcc agc aac ttg gaa atc agc cag tcc cct acc    738
Ser Pro Ala Ser Leu Ala Ser Asn Leu Glu Ile Ser Gln Ser Pro Thr
            200             205             210

atg ccc ttc ctc agc ctg cac cgc agc cca cat ggg ccc agc aag ctc    786
Met Pro Phe Leu Ser Leu His Arg Ser Pro His Gly Pro Ser Lys Leu
215             220             225             230

tgt gac gac ccc cag gcc agc ttg gtg ccc gag cct gtc ccc ggt ggc    834
Cys Asp Asp Pro Gln Ala Ser Leu Val Pro Glu Pro Val Pro Gly Gly
                235             240             245

tgc cag gag cct gag gag atg agc tgg ccg cca tcg ggg gag att gcc    882
Cys Gln Glu Pro Glu Glu Met Ser Trp Pro Pro Ser Gly Glu Ile Ala
            250             255             260

agc cca cca gag ctg cca agc agc cca cct cct ggg ctt ccc gaa gtg    930
Ser Pro Pro Glu Leu Pro Ser Ser Pro Pro Pro Gly Leu Pro Glu Val
            265             270             275

gcc cca gat gca acc tcc act ggc ctc cct gat acc ccc gca gct cca    978
Ala Pro Asp Ala Thr Ser Thr Gly Leu Pro Asp Thr Pro Ala Ala Pro
            280             285             290

gaa acc agc acc aac tac cca gtg gag tgc acc gag ggg tct gca ggc   1026
Glu Thr Ser Thr Asn Tyr Pro Val Glu Cys Thr Glu Gly Ser Ala Gly
295             300             305             310

ccc cag tct ctc ccc ttg cct att ctg gag ccg gtc aaa aac ccc tgc   1074
Pro Gln Ser Leu Pro Leu Pro Ile Leu Glu Pro Val Lys Asn Pro Cys
            315             320             325

tct gtc aaa gac cag acg cca ctc caa ctt tct gta gaa gat acc acc   1122
Ser Val Lys Asp Gln Thr Pro Leu Gln Leu Ser Val Glu Asp Thr Thr
            330             335             340

tct cca aat acc aag ccg tgc cca cct act ccc acc acc cca gaa aca   1170
Ser Pro Asn Thr Lys Pro Cys Pro Pro Thr Pro Thr Thr Pro Glu Thr
            345             350             355
```

286

```
tcc cct cct cct cct cct cct cct cct tca tct act cct tgt tca gct    1218
Ser Pro Pro Pro Pro Pro Pro Pro Pro Ser Ser Thr Pro Cys Ser Ala
    360             365             370

cac ctg acc ccc tcc tcc ctg ttc cct tcc tcc ctg gaa tca tca tcg    1266
His Leu Thr Pro Ser Ser Leu Phe Pro Ser Ser Leu Glu Ser Ser Ser
375             380             385             390

gaa cag aaa ttc tat aac ttt gtg atc ctc cac gcc agg gca gac gaa    1314
Glu Gln Lys Phe Tyr Asn Phe Val Ile Leu His Ala Arg Ala Asp Glu
            395             400             405

cac atc gcc ctg cgg gtt cgg gag aag ctg gag gcc ctt ggc gtg ccc    1362
His Ile Ala Leu Arg Val Arg Glu Lys Leu Glu Ala Leu Gly Val Pro
            410             415             420

gac ggg gcc acc ttc tgc gag gat ttc cag gtg ccg ggg cgc ggg gag    1410
Asp Gly Ala Thr Phe Cys Glu Asp Phe Gln Val Pro Gly Arg Gly Glu
            425             430             435

ctg agc tgc ctg cag gac gcc ata gac cac tca gct ttc atc atc cta    1458
Leu Ser Cys Leu Gln Asp Ala Ile Asp His Ser Ala Phe Ile Ile Leu
    440             445             450

ctt ctc acc tcc aac ttc gac tgt cgc ctg agc ctg cac cag gtg aac    1506
Leu Leu Thr Ser Asn Phe Asp Cys Arg Leu Ser Leu His Gln Val Asn
455             460             465             470

caa gcc atg atg agc aac ctc acg cga cag ggg tcg cca gac tgt gtc    1554
Gln Ala Met Met Ser Asn Leu Thr Arg Gln Gly Ser Pro Asp Cys Val
            475             480             485

atc ccc ttc ctg ccc ctg gag agc tcc ccg gcc cag ctc agc tcc gac    1602
Ile Pro Phe Leu Pro Leu Glu Ser Ser Pro Ala Gln Leu Ser Ser Asp
            490             495             500

acg gcc agc ctg ctc tcc ggg ctg gtg cgg ctg gac gaa cac tcc cag    1650
Thr Ala Ser Leu Leu Ser Gly Leu Val Arg Leu Asp Glu His Ser Gln
            505             510             515

atc ttc gcc agg aag gtg gcc aac acc ttc aag ccc cac agg ctt cag    1698
Ile Phe Ala Arg Lys Val Ala Asn Thr Phe Lys Pro His Arg Leu Gln
    520             525             530

gcc cga aag gcc atg tgg agg aag gaa cag gac acc cga gcc ctg cgg    1746
Ala Arg Lys Ala Met Trp Arg Lys Glu Gln Asp Thr Arg Ala Leu Arg
535             540             545             550

gaa cag agc caa cac ctg gac ggt gag cgg atg cag gcg gcg gca ctg    1794
Glu Gln Ser Gln His Leu Asp Gly Glu Arg Met Gln Ala Ala Ala Leu
            555             560             565

aac gca gcc tac tca gcc tac ctc cag agc tac ttg tcc tac cag gca    1842
Asn Ala Ala Tyr Ser Ala Tyr Leu Gln Ser Tyr Leu Ser Tyr Gln Ala
            570             575             580

cag atg gag cag ctc cag gtg gct ttt ggg agc cac atg tca ttt ggg    1890
```

287

```
Gln Met Glu Gln Leu Gln Val Ala Phe Gly Ser His Met Ser Phe Gly
        585                 590                 595

act ggg gcg ccc tat ggg gct cga atg ccc ttt ggg ggc cag gtg ccc   1938
Thr Gly Ala Pro Tyr Gly Ala Arg Met Pro Phe Gly Gly Gln Val Pro
        600                 605                 610

ctg gga gcc ccg cca ccc ttt ccc act tgg ccg ggg tgc ccg cag ccg   1986
Leu Gly Ala Pro Pro Pro Phe Pro Thr Trp Pro Gly Cys Pro Gln Pro
615                 620                 625                 630

cca ccc ctg cac gca tgg cag gct ggc acc ccc cca ccg ccc tcc cca   2034
Pro Pro Leu His Ala Trp Gln Ala Gly Thr Pro Pro Pro Pro Ser Pro
                635                 640                 645

cag cca gca gcc ttt cca cag tca ctg ccc ttc ccg cag tcc cca gcc   2082
Gln Pro Ala Ala Phe Pro Gln Ser Leu Pro Phe Pro Gln Ser Pro Ala
                650                 655                 660

ttc cct acg gcc tca ccc gca ccc cct cag agc cca ggg ctg caa ccc   2130
Phe Pro Thr Ala Ser Pro Ala Pro Pro Gln Ser Pro Gly Leu Gln Pro
        665                 670                 675

ctc att atc cac cac gca cag atg gta cag ctg ggg ctg aac aac cac   2178
Leu Ile Ile His His Ala Gln Met Val Gln Leu Gly Leu Asn Asn His
        680                 685                 690

atg tgg aac cag aga ggg tcc cag gcg ccc gag gac aag acg cag gag   2226
Met Trp Asn Gln Arg Gly Ser Gln Ala Pro Glu Asp Lys Thr Gln Glu
695                 700                 705                 710

gca gaa tgaccgcgtg tccttgcctg accacctggg aacacccct ggacccaggc    2282
Ala Glu

atcggccagg accccataga gcaccccggt ctgccctgtg ccctgtggac agtggaagat 2342

gaggtcatct gccactttca ggacattgtc cgggagccct tcatttagga caaaacgggc 2402

gcgatgatgc cctggctttc agggtggtca gaactggata cggtgtttac aattccaatc 2462

tctctatttc tgggtgaagg gtcttggtgg tgggggtatt gctacggtct tttaattata 2522

ataaatattt attgaatgct tc                                          2544
```

<210> 154
<211> 712
<212> PRT
<213> Homo sapiens

<400> 154

```
Met Ala Cys Thr Gly Pro Ser Leu Pro Ser Ala Phe Asp Ile Leu Gly
 1               5                  10                  15

Ala Ala Gly Gln Asp Lys Leu Leu Tyr Leu Lys His Lys Leu Lys Thr
            20                  25                  30
```

288

```
Pro Arg Pro Gly Cys Gln Gly Gln Asp Leu Leu His Ala Met Val Leu
        35                40                45

Leu Lys Leu Gly Gln Glu Thr Glu Ala Arg Ile Ser Leu Glu Ala Leu
        50                55                60

Lys Ala Asp Ala Val Ala Arg Leu Val Ala Arg Gln Trp Ala Gly Val
65                70                75                80

Asp Ser Thr Glu Asp Pro Glu Glu Pro Pro Asp Val Ser Trp Ala Val
            85                90                95

Ala Arg Leu Tyr His Leu Leu Ala Glu Glu Lys Leu Cys Pro Ala Ser
            100               105               110

Leu Arg Asp Val Ala Tyr Gln Glu Ala Val Arg Thr Leu Ser Ser Arg
        115               120               125

Asp Asp His Arg Leu Gly Glu Leu Gln Asp Glu Ala Arg Asn Arg Cys
    130               135               140

Gly Trp Asp Ile Ala Gly Asp Pro Gly Ser Ile Arg Thr Leu Gln Ser
145               150               155               160

Asn Leu Gly Cys Leu Pro Pro Ser Ser Ala Leu Pro Ser Gly Thr Arg
            165               170               175

Ser Leu Pro Arg Pro Ile Asp Gly Val Ser Asp Trp Ser Gln Gly Cys
            180               185               190

Ser Leu Arg Ser Thr Gly Ser Pro Ala Ser Leu Ala Ser Asn Leu Glu
            195               200               205

Ile Ser Gln Ser Pro Thr Met Pro Phe Leu Ser Leu His Arg Ser Pro
    210               215               220

His Gly Pro Ser Lys Leu Cys Asp Asp Pro Gln Ala Ser Leu Val Pro
225               230               235               240

Glu Pro Val Pro Gly Gly Cys Gln Glu Pro Glu Glu Met Ser Trp Pro
            245               250               255

Pro Ser Gly Glu Ile Ala Ser Pro Pro Glu Leu Pro Ser Ser Pro Pro
            260               265               270

Pro Gly Leu Pro Glu Val Ala Pro Asp Ala Thr Ser Thr Gly Leu Pro
            275               280               285

Asp Thr Pro Ala Ala Pro Glu Thr Ser Thr Asn Tyr Pro Val Glu Cys
    290               295               300

Thr Glu Gly Ser Ala Gly Pro Gln Ser Leu Pro Leu Pro Ile Leu Glu
305               310               315               320

Pro Val Lys Asn Pro Cys Ser Val Lys Asp Gln Thr Pro Leu Gln Leu
            325               330               335
```

289

```
Ser Val Glu Asp Thr Thr Ser Pro Asn Thr Lys Pro Cys Pro Pro Thr
        340                 345             350

Pro Thr Thr Pro Glu Thr Ser Pro Pro Pro Pro Pro Pro Pro Ser
        355                 360             365

Ser Thr Pro Cys Ser Ala His Leu Thr Pro Ser Ser Leu Phe Pro Ser
        370                 375             380

Ser Leu Glu Ser Ser Ser Glu Gln Lys Phe Tyr Asn Phe Val Ile Leu
385                 390             395                 400

His Ala Arg Ala Asp Glu His Ile Ala Leu Arg Val Arg Glu Lys Leu
            405             410                 415

Glu Ala Leu Gly Val Pro Asp Gly Ala Thr Phe Cys Glu Asp Phe Gln
        420             425                 430

Val Pro Gly Arg Gly Glu Leu Ser Cys Leu Gln Asp Ala Ile Asp His
        435             440                 445

Ser Ala Phe Ile Ile Leu Leu Leu Thr Ser Asn Phe Asp Cys Arg Leu
    450             455             460

Ser Leu His Gln Val Asn Gln Ala Met Met Ser Asn Leu Thr Arg Gln
465             470             475                 480

Gly Ser Pro Asp Cys Val Ile Pro Phe Leu Pro Leu Glu Ser Ser Pro
            485             490                 495

Ala Gln Leu Ser Ser Asp Thr Ala Ser Leu Leu Ser Gly Leu Val Arg
        500             505             510

Leu Asp Glu His Ser Gln Ile Phe Ala Arg Lys Val Ala Asn Thr Phe
        515             520             525

Lys Pro His Arg Leu Gln Ala Arg Lys Ala Met Trp Arg Lys Glu Gln
    530             535             540

Asp Thr Arg Ala Leu Arg Glu Gln Ser Gln His Leu Asp Gly Glu Arg
545             550             555                 560

Met Gln Ala Ala Ala Leu Asn Ala Ala Tyr Ser Ala Tyr Leu Gln Ser
            565             570             575

Tyr Leu Ser Tyr Gln Ala Gln Met Glu Gln Leu Gln Val Ala Phe Gly
        580             585             590

Ser His Met Ser Phe Gly Thr Gly Ala Pro Tyr Gly Ala Arg Met Pro
        595             600             605

Phe Gly Gly Gln Val Pro Leu Gly Ala Pro Pro Pro Phe Pro Thr Trp
    610             615             620

Pro Gly Cys Pro Gln Pro Pro Pro Leu His Ala Trp Gln Ala Gly Thr
625             630             635                 640
```

290

```
Pro Pro Pro Pro Ser Pro Gln Pro Ala Ala Phe Pro Gln Ser Leu Pro
            645         650                     655

Phe Pro Gln Ser Pro Ala Phe Pro Thr Ala Ser Pro Ala Pro Pro Gln
            660         665                     670

Ser Pro Gly Leu Gln Pro Leu Ile Ile His His Ala Gln Met Val Gln
            675         680                     685

Leu Gly Leu Asn Asn His Met Trp Asn Gln Arg Gly Ser Gln Ala Pro
            690         695                     700

Glu Asp Lys Thr Gln Glu Ala Glu
705                 710
```

```
<210> 155
<211> 3456
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (281)..(3016)

<400> 155
agcattcaag gagctcccca ggagaaagag caagttctga ggagccctct gagcccggaa 60

cgtgtccacc cggtcatgcc cgccgcgcac cagccccgca gtggacttgg aggaggagga 120

ggaggagagc tctgtggatg gcaaagggga ccggaagagc acaggcctga aactctccaa 180

gaagaaagca aggaggagac acacggatga cccaagcaag gaatgcttca ctctgaaatt 240

tgacctgaat gtggacattg agacagagat cgtcccagcc atg aag aag aag tca 295
                                            Met Lys Lys Lys Ser
                                            1               5

ctg ggg gag gtg ctg ctg cct gta ttt gaa agg aag ggc att gcg ctg 343
Leu Gly Glu Val Leu Leu Pro Val Phe Glu Arg Lys Gly Ile Ala Leu
            10                  15                  20

ggc aaa gtg gac atc tac ctg gac cag tcc aac aca ccc ctg tcc ctc 391
Gly Lys Val Asp Ile Tyr Leu Asp Gln Ser Asn Thr Pro Leu Ser Leu
            25                  30                  35

acc ttc gag gcc tac agg ttc ggg gga cac tac ctt cgt gtc aaa gcc 439
Thr Phe Glu Ala Tyr Arg Phe Gly Gly His Tyr Leu Arg Val Lys Ala
            40                  45                  50

cca gcc aag cct gga gat gag ggc aag gtg gag cag ggc atg aag gac 487
Pro Ala Lys Pro Gly Asp Glu Gly Lys Val Glu Gln Gly Met Lys Asp
        55                  60                  65

tcc aag tcc ctg agt ttg ccg att ctg cgg cca gct ggg acc ggg ccc 535
Ser Lys Ser Leu Ser Leu Pro Ile Leu Arg Pro Ala Gly Thr Gly Pro
```

291

```
        70                    75                    80                    85
ccc gcc ctg gag cgt gtg gac gcc cag agc cgc cgg gag agc ctg gac    583
Pro Ala Leu Glu Arg Val Asp Ala Gln Ser Arg Arg Glu Ser Leu Asp
                90                    95                   100

atc ttg gcc cct ggc cgc cgc cgc aag aac atg tcg gag ttc ctg ggg    631
Ile Leu Ala Pro Gly Arg Arg Arg Lys Asn Met Ser Glu Phe Leu Gly
               105                   110                   115

gag gcg agc atc ccc ggg cag gag ccc ccc acg ccc tcc agc tgc tct    679
Glu Ala Ser Ile Pro Gly Gln Glu Pro Pro Thr Pro Ser Ser Cys Ser
               120                   125                   130

ctg ccc agc ggc agc agt ggc agc acc aac act ggc gac agc tgg aag    727
Leu Pro Ser Gly Ser Ser Gly Ser Thr Asn Thr Gly Asp Ser Trp Lys
               135                   140                   145

aac cgg gcg gcc agt cgc ttc agc ggc ttt ttc agc tcc ggc ccc agc    775
Asn Arg Ala Ala Ser Arg Phe Ser Gly Phe Phe Ser Ser Gly Pro Ser
150                   155                   160                   165

acc agc gcc ttt ggc cgg gag gta gac aag atg gag cag ctg gag ggc    823
Thr Ser Ala Phe Gly Arg Glu Val Asp Lys Met Glu Gln Leu Glu Gly
                    170                   175                   180

aag ctg cac acc tac agc ctc ttc ggg ctg ccc agg ctg ccc cgg ggg    871
Lys Leu His Thr Tyr Ser Leu Phe Gly Leu Pro Arg Leu Pro Arg Gly
               185                   190                   195

ctg cgc ttc gac cat gac tcc tgg gag gag gag tac gat gaa gac gag    919
Leu Arg Phe Asp His Asp Ser Trp Glu Glu Glu Tyr Asp Glu Asp Glu
               200                   205                   210

gat gag gac aat gcc tgc ctg agg ctg gag gac agc tgg cgg gag ctc    967
Asp Glu Asp Asn Ala Cys Leu Arg Leu Glu Asp Ser Trp Arg Glu Leu
       215                   220                   225

att gat ggg cat gag aag ctg acc cgg cgg cag tgc cac cag cag gag    1015
Ile Asp Gly His Glu Lys Leu Thr Arg Arg Gln Cys His Gln Gln Glu
230                   235                   240                   245

gcg gtg tgg gag ctg ctg cac acg gag gcc tcc tac atc agg aaa ctg    1063
Ala Val Trp Glu Leu Leu His Thr Glu Ala Ser Tyr Ile Arg Lys Leu
                   250                   255                   260

cgg gtg atc atc aac ctg ttc ttg tgc tgc ctc ctg aac ctg caa gag    1111
Arg Val Ile Ile Asn Leu Phe Leu Cys Cys Leu Leu Asn Leu Gln Glu
               265                   270                   275

tca ggg ctg ctg tgt gag gtg gag gcg gag cgc ctg ttc agc aac atc    1159
Ser Gly Leu Leu Cys Glu Val Glu Ala Glu Arg Leu Phe Ser Asn Ile
               280                   285                   290

ccg gag atc gcg cag ctg cac cgc agg ctg tgg gct agc gtg atg gcg    1207
Pro Glu Ile Ala Gln Leu His Arg Arg Leu Trp Ala Ser Val Met Ala
       295                   300                   305
```

292

```
ccg gtg ctg gag aag gcg cgg cgc acg cga gcg ctg cta cag ccc ggg   1255
Pro Val Leu Glu Lys Ala Arg Arg Thr Arg Ala Leu Leu Gln Pro Gly
310                 315                 320                 325

gac ttc ctc aaa ggc ttc aag atg ttc ggc tcg ctc ttc aag ccc tac   1303
Asp Phe Leu Lys Gly Phe Lys Met Phe Gly Ser Leu Phe Lys Pro Tyr
                330                 335                 340

atc cgc tac tgc atg gag gag gag ggc tgc atg gag tac atg cgc ggc   1351
Ile Arg Tyr Cys Met Glu Glu Glu Gly Cys Met Glu Tyr Met Arg Gly
                345                 350                 355

ctg ctg cgc gac aac gac ctc ttc cgg gcc tac atc acg tgg gcg gag   1399
Leu Leu Arg Asp Asn Asp Leu Phe Arg Ala Tyr Ile Thr Trp Ala Glu
                360                 365                 370

aag cac cca cag tgc cag agg ctg aag ctg agc gac atg ctg gcc aaa   1447
Lys His Pro Gln Cys Gln Arg Leu Lys Leu Ser Asp Met Leu Ala Lys
        375                 380                 385

ccc cac cag cgg ctc acc aag tac ccg ctg ctg ctc aag tcg gtg ctg   1495
Pro His Gln Arg Leu Thr Lys Tyr Pro Leu Leu Leu Lys Ser Val Leu
390                 395                 400                 405

agg aag acc gag gag ccg cgc gcc aag gag gcc gtc gtc gcc atg atc   1543
Arg Lys Thr Glu Glu Pro Arg Ala Lys Glu Ala Val Val Ala Met Ile
                410                 415                 420

ggc tcc gtg gag cgc ttc atc cac cac gtg aac gcg tgc atg cgg cag   1591
Gly Ser Val Glu Arg Phe Ile His His Val Asn Ala Cys Met Arg Gln
                425                 430                 435

cgg cag gag cgg cag cgg ctg gcg gcc gtg gtg agc cgc atc gac gcc   1639
Arg Gln Glu Arg Gln Arg Leu Ala Ala Val Val Ser Arg Ile Asp Ala
                440                 445                 450

tac gag gtg gtg gaa agc agc agc gac gaa gtg gac aag ctc ctg aag   1687
Tyr Glu Val Val Glu Ser Ser Ser Asp Glu Val Asp Lys Leu Leu Lys
        455                 460                 465

gaa ttt ctg cac ctg gac ttg aca gcg ccc atc cct ggc gcc tcc ccg   1735
Glu Phe Leu His Leu Asp Leu Thr Ala Pro Ile Pro Gly Ala Ser Pro
470                 475                 480                 485

gag gag acg cgg cag ctg ctg ctg gag ggg agc ctg agg atg aag gag   1783
Glu Glu Thr Arg Gln Leu Leu Leu Glu Gly Ser Leu Arg Met Lys Glu
                490                 495                 500

ggg aag gac agc aag atg gat gtg tac tgc ttc ctc ttc acg gat ctg   1831
Gly Lys Asp Ser Lys Met Asp Val Tyr Cys Phe Leu Phe Thr Asp Leu
                505                 510                 515

ctg ttg gtg acc aaa gca gtg aag aag gca gag agg acc agg gtc atc   1879
Leu Leu Val Thr Lys Ala Val Lys Lys Ala Glu Arg Thr Arg Val Ile
                520                 525                 530
```

293

```
agg cca ccc ctg ctc gtg gac aag att gtg tgc cgg gag cta cgg gac   1927
Arg Pro Pro Leu Leu Val Asp Lys Ile Val Cys Arg Glu Leu Arg Asp
    535                 540                 545

cct ggg tcc ttc ctc ctt atc tac ctg aat gag ttt cac agt gct gta   1975
Pro Gly Ser Phe Leu Leu Ile Tyr Leu Asn Glu Phe His Ser Ala Val
550                 555                 560                 565

ggg gcc tac acg ttc cag gcc agt ggc cag gcc ttg tgc cgt ggc tgg   2023
Gly Ala Tyr Thr Phe Gln Ala Ser Gly Gln Ala Leu Cys Arg Gly Trp
                570                 575                 580

gtg gac acc att tac aat gcc cag aac cag ctg caa cag ctg cgt gca   2071
Val Asp Thr Ile Tyr Asn Ala Gln Asn Gln Leu Gln Gln Leu Arg Ala
                585                 590                 595

cag gag ccc cca ggc agt cag cag ccc ctg cag agc ctg gaa gag gag   2119
Gln Glu Pro Pro Gly Ser Gln Gln Pro Leu Gln Ser Leu Glu Glu Glu
        600                 605                 610

gag gat gag cag gag gag gaa gag gag gag gag gag gag gag gag gaa   2167
Glu Asp Glu Gln Glu Glu Glu Glu Glu Glu Glu Glu Glu Glu Glu Glu
    615                 620                 625

ggc gag gac agt ggc act tca gct gcc agc tcc cct acc atc atg cgg   2215
Gly Glu Asp Ser Gly Thr Ser Ala Ala Ser Ser Pro Thr Ile Met Arg
630                 635                 640                 645

aaa agc agc ggc agc ccc gac tct cag cac tgt gcc tca gat ggc tcc   2263
Lys Ser Ser Gly Ser Pro Asp Ser Gln His Cys Ala Ser Asp Gly Ser
                650                 655                 660

acg gag acc ctg gcc atg gtt gtg gta gag cct ggg gac acg ctg tcc   2311
Thr Glu Thr Leu Ala Met Val Val Val Glu Pro Gly Asp Thr Leu Ser
                665                 670                 675

tcc ccc gag ttc gac agc ggt cct ttc agc tcc cag tct gat gag acc   2359
Ser Pro Glu Phe Asp Ser Gly Pro Phe Ser Ser Gln Ser Asp Glu Thr
        680                 685                 690

tct ctc agc acc act gcc tca tct gcc acg ccc acc agt gag ctg ctg   2407
Ser Leu Ser Thr Thr Ala Ser Ser Ala Thr Pro Thr Ser Glu Leu Leu
    695                 700                 705

ccc ctg ggt ccg gtg gac ggc cgc tcc tgc tcc atg gac tct gcc tac   2455
Pro Leu Gly Pro Val Asp Gly Arg Ser Cys Ser Met Asp Ser Ala Tyr
710                 715                 720                 725

ggc acc ctc tcc cca acc tcc tta caa gac ttt gtg gcc cca ggc cca   2503
Gly Thr Leu Ser Pro Thr Ser Leu Gln Asp Phe Val Ala Pro Gly Pro
                730                 735                 740

atg gca gag cta gtg cct cgg gcc cca gag tcc cca cga gtt cct tcc   2551
Met Ala Glu Leu Val Pro Arg Ala Pro Glu Ser Pro Arg Val Pro Ser
            745                 750                 755

cct cca ccc tcg ccc cgt ctc cgc cgc cgc acc cct gtc cag ctg ttg   2599
```

294

```
Pro Pro Pro Ser Pro Arg Leu Arg Arg Arg Thr Pro Val Gln Leu Leu
        760         765             770

agc tgc ccg ccc cac ctg ctc aag tct aag tcc gag gcc agc ctc ctc   2647
Ser Cys Pro Pro His Leu Leu Lys Ser Lys Ser Glu Ala Ser Leu Leu
        775             780             785

cag ctg ctg gca ggg gct ggc acc cat ggg aca ccc tct gcc ccc agc   2695
Gln Leu Leu Ala Gly Ala Gly Thr His Gly Thr Pro Ser Ala Pro Ser
790             795             800             805

cgc agc ctg tca gag ctc tgc ctg gct gtt cca gcc cca ggt att agg   2743
Arg Ser Leu Ser Glu Leu Cys Leu Ala Val Pro Ala Pro Gly Ile Arg
            810             815             820

act cag ggc tcc cct cag gaa gct ggg ccc agc tgg gat tgc cga ggg   2791
Thr Gln Gly Ser Pro Gln Glu Ala Gly Pro Ser Trp Asp Cys Arg Gly
            825             830             835

gcc cct agc cct ggc agc ggt cct ggg cta gtc ggc tgc ctg gcc ggg   2839
Ala Pro Ser Pro Gly Ser Gly Pro Gly Leu Val Gly Cys Leu Ala Gly
            840             845             850

gaa cct gca ggc tcc cac agg aag agg tgt gga gac ctg ccc tcg ggg   2887
Glu Pro Ala Gly Ser His Arg Lys Arg Cys Gly Asp Leu Pro Ser Gly
    855             860             865

gcc tct ccc agg gtc cag cct gag ccc cca cca ggg gtc tct gcc cag   2935
Ala Ser Pro Arg Val Gln Pro Glu Pro Pro Pro Gly Val Ser Ala Gln
870             875             880             885

cac agg aag ctg acc ctg gcc cag ctc tac cga atc agg acc acc ctg   2983
His Arg Lys Leu Thr Leu Ala Gln Leu Tyr Arg Ile Arg Thr Thr Leu
            890             895             900

ctg ctt aac tcc acg ctc act gcc tcg gag gtc tgagcagagg gaggccccca 3036
Leu Leu Asn Ser Thr Leu Thr Ala Ser Glu Val
            905             910

agagtgccat tgaccaagag acagcagaca gcctgcctcc tggggcgtgc cggcacctgc 3096

ttcagctact gcctcctgta tgcatgagcc ggatgctggg caggatccct gcctacgccc 3156

gggcccgatt tgcgctttgc cggactggat ggagtggagg aggcccaggc cacagtacca 3216

ccccacctgc ccaggcagcc cctcgtcacc tactccccga agttaccagc tcagctcgag 3276

tcttcagggc tgggctccta ggctgcccat cctacttcta ccctcactgg cctccagtgg 3336

gattcactcc tgccctgccc ccaccttccc agtcccacag gccacccctg gcttgggctg 3396

ggttctgtga agttacgtat ttattgagct tttggttctt ttataaagac ttgtctagac 3456
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<210> 156
<211> 912
<212> PRT

295

<213> Homo sapiens

<400> 156

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Met Lys Lys Lys Ser Leu Gly Glu Val Leu Leu Pro Val Phe Glu Arg
 1               5                  10                  15

Lys Gly Ile Ala Leu Gly Lys Val Asp Ile Tyr Leu Asp Gln Ser Asn
                20                  25                  30

Thr Pro Leu Ser Leu Thr Phe Glu Ala Tyr Arg Phe Gly Gly His Tyr
            35                  40                  45

Leu Arg Val Lys Ala Pro Ala Lys Pro Gly Asp Glu Gly Lys Val Glu
        50                  55                  60

Gln Gly Met Lys Asp Ser Lys Ser Leu Ser Leu Pro Ile Leu Arg Pro
65              70                  75                  80

Ala Gly Thr Gly Pro Pro Ala Leu Glu Arg Val Asp Ala Gln Ser Arg
                85                  90                  95

Arg Glu Ser Leu Asp Ile Leu Ala Pro Gly Arg Arg Arg Lys Asn Met
            100                 105                 110

Ser Glu Phe Leu Gly Glu Ala Ser Ile Pro Gly Gln Glu Pro Pro Thr
            115                 120                 125

Pro Ser Ser Cys Ser Leu Pro Ser Gly Ser Ser Gly Ser Thr Asn Thr
    130                 135                 140

Gly Asp Ser Trp Lys Asn Arg Ala Ala Ser Arg Phe Ser Gly Phe Phe
145                 150                 155                 160

Ser Ser Gly Pro Ser Thr Ser Ala Phe Gly Arg Glu Val Asp Lys Met
                165                 170                 175

Glu Gln Leu Glu Gly Lys Leu His Thr Tyr Ser Leu Phe Gly Leu Pro
            180                 185                 190

Arg Leu Pro Arg Gly Leu Arg Phe Asp His Asp Ser Trp Glu Glu Glu
        195                 200                 205

Tyr Asp Glu Asp Glu Asp Glu Asp Asn Ala Cys Leu Arg Leu Glu Asp
    210                 215                 220

Ser Trp Arg Glu Leu Ile Asp Gly His Glu Lys Leu Thr Arg Arg Gln
225                 230                 235                 240

Cys His Gln Gln Glu Ala Val Trp Glu Leu Leu His Thr Glu Ala Ser
                245                 250                 255

Tyr Ile Arg Lys Leu Arg Val Ile Ile Asn Leu Phe Leu Cys Cys Leu
                260                 265                 270

Leu Asn Leu Gln Glu Ser Gly Leu Leu Cys Glu Val Glu Ala Glu Arg
        275                 280                 285
```

296

```
Leu Phe Ser Asn Ile Pro Glu Ile Ala Gln Leu His Arg Arg Leu Trp
    290             295             300

Ala Ser Val Met Ala Pro Val Leu Glu Lys Ala Arg Arg Thr Arg Ala
305             310             315                 320

Leu Leu Gln Pro Gly Asp Phe Leu Lys Gly Phe Lys Met Phe Gly Ser
            325             330             335

Leu Phe Lys Pro Tyr Ile Arg Tyr Cys Met Glu Glu Glu Gly Cys Met
            340             345             350

Glu Tyr Met Arg Gly Leu Leu Arg Asp Asn Asp Leu Phe Arg Ala Tyr
        355             360             365

Ile Thr Trp Ala Glu Lys His Pro Gln Cys Gln Arg Leu Lys Leu Ser
    370             375             380

Asp Met Leu Ala Lys Pro His Gln Arg Leu Thr Lys Tyr Pro Leu Leu
385             390             395                 400

Leu Lys Ser Val Leu Arg Lys Thr Glu Glu Pro Arg Ala Lys Glu Ala
            405             410             415

Val Val Ala Met Ile Gly Ser Val Glu Arg Phe Ile His His Val Asn
            420             425             430

Ala Cys Met Arg Gln Arg Gln Glu Arg Gln Arg Leu Ala Ala Val Val
        435             440             445

Ser Arg Ile Asp Ala Tyr Glu Val Val Glu Ser Ser Ser Asp Glu Val
    450             455             460

Asp Lys Leu Leu Lys Glu Phe Leu His Leu Asp Leu Thr Ala Pro Ile
465             470             475                 480

Pro Gly Ala Ser Pro Glu Glu Thr Arg Gln Leu Leu Leu Glu Gly Ser
            485             490             495

Leu Arg Met Lys Glu Gly Lys Asp Ser Lys Met Asp Val Tyr Cys Phe
        500             505             510

Leu Phe Thr Asp Leu Leu Leu Val Thr Lys Ala Val Lys Lys Ala Glu
        515             520             525

Arg Thr Arg Val Ile Arg Pro Pro Leu Leu Val Asp Lys Ile Val Cys
    530             535             540

Arg Glu Leu Arg Asp Pro Gly Ser Phe Leu Leu Ile Tyr Leu Asn Glu
545             550             555                 560

Phe His Ser Ala Val Gly Ala Tyr Thr Phe Gln Ala Ser Gly Gln Ala
            565             570             575

Leu Cys Arg Gly Trp Val Asp Thr Ile Tyr Asn Ala Gln Asn Gln Leu
            580             585             590
```

297

```
Gln Gln Leu Arg Ala Gln Glu Pro Pro Gly Ser Gln Gln Pro Leu Gln
        595             600             605

Ser Leu Glu Glu Glu Glu Asp Glu Gln Glu Glu Glu Glu Glu Glu Glu
        610             615             620

Glu Glu Glu Glu Glu Gly Glu Asp Ser Gly Thr Ser Ala Ala Ser Ser
625             630             635             640

Pro Thr Ile Met Arg Lys Ser Ser Gly Ser Pro Asp Ser Gln His Cys
            645             650             655

Ala Ser Asp Gly Ser Thr Glu Thr Leu Ala Met Val Val Val Glu Pro
            660             665             670

Gly Asp Thr Leu Ser Ser Pro Glu Phe Asp Ser Gly Pro Phe Ser Ser
        675             680             685

Gln Ser Asp Glu Thr Ser Leu Ser Thr Thr Ala Ser Ser Ala Thr Pro
    690             695             700

Thr Ser Glu Leu Leu Pro Leu Gly Pro Val Asp Gly Arg Ser Cys Ser
705             710             715             720

Met Asp Ser Ala Tyr Gly Thr Leu Ser Pro Thr Ser Leu Gln Asp Phe
            725             730             735

Val Ala Pro Gly Pro Met Ala Glu Leu Val Pro Arg Ala Pro Glu Ser
            740             745             750

Pro Arg Val Pro Ser Pro Pro Pro Ser Pro Arg Leu Arg Arg Arg Thr
        755             760             765

Pro Val Gln Leu Leu Ser Cys Pro Pro His Leu Leu Lys Ser Lys Ser
    770             775             780

Glu Ala Ser Leu Leu Gln Leu Leu Ala Gly Ala Gly Thr His Gly Thr
785             790             795             800

Pro Ser Ala Pro Ser Arg Ser Leu Ser Glu Leu Cys Leu Ala Val Pro
            805             810             815

Ala Pro Gly Ile Arg Thr Gln Gly Ser Pro Gln Glu Ala Gly Pro Ser
            820             825             830

Trp Asp Cys Arg Gly Ala Pro Ser Pro Gly Ser Gly Pro Gly Leu Val
        835             840             845

Gly Cys Leu Ala Gly Glu Pro Ala Gly Ser His Arg Lys Arg Cys Gly
    850             855             860

Asp Leu Pro Ser Gly Ala Ser Pro Arg Val Gln Pro Glu Pro Pro Pro
865             870             875             880

Gly Val Ser Ala Gln His Arg Lys Leu Thr Leu Ala Gln Leu Tyr Arg
            885             890             895
```

298

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Ile Arg Thr Thr Leu Leu Leu Asn Ser Thr Leu Thr Ala Ser Glu Val
        900                 905                 910
```

<210> 157
<211> 3609
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (152)..(3169)

<400> 157

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ggatgtatgt caccacgccg actgccagca gctgcaccgc cggggggcccc tcaacctctg  120

cgaggcctgt gacagcaagt tccacagcac c atg cat tat gat ggg cat gtc     172
                                    Met His Tyr Asp Gly His Val
                                     1                 5

cgc ttc gac ctt ccc cca caa ggc tct gtg ctg gcc cgg aac gtg tcc   220
Arg Phe Asp Leu Pro Pro Gln Gly Ser Val Leu Ala Arg Asn Val Ser
         10          15                  20

acc cgg tca tgc ccg ccg cgc acc agc ccc gca gtg gac ttg gag gag   268
Thr Arg Ser Cys Pro Pro Arg Thr Ser Pro Ala Val Asp Leu Glu Glu
    25                  30                  35

gag gag gag gag agc tct gtg gat ggc aaa ggg gac cgg aag agc aca   316
Glu Glu Glu Glu Ser Ser Val Asp Gly Lys Gly Asp Arg Lys Ser Thr
40                  45                  50                  55

ggc ctg aaa ctc tcc aag aag aaa gca agg agg aga cac acg gat gac   364
Gly Leu Lys Leu Ser Lys Lys Lys Ala Arg Arg Arg His Thr Asp Asp
             60                  65                  70

cca agc aag gaa tgc ttc act ctg aaa ttt gac ctg aat gtg gac att   412
Pro Ser Lys Glu Cys Phe Thr Leu Lys Phe Asp Leu Asn Val Asp Ile
             75                  80                  85

gag aca gag atc gtc cca gcc atg aag aag aag tca ctg ggg gag gtg   460
Glu Thr Glu Ile Val Pro Ala Met Lys Lys Lys Ser Leu Gly Glu Val
             90                  95                 100

ctg ctg cct gta ttt gaa agg aag ggc att gcg ctg ggc aaa gtg gac   508
Leu Leu Pro Val Phe Glu Arg Lys Gly Ile Ala Leu Gly Lys Val Asp
    105                 110                 115

atc tac ctg gac cag tcc aac aca ccc ctg tcc ctc acc ttc gag gcc   556
Ile Tyr Leu Asp Gln Ser Asn Thr Pro Leu Ser Leu Thr Phe Glu Ala
120                 125                 130                 135

tac agg ttc ggg gga cac tac ctt cgt gtc aaa gcc cca gcc aag cct   604
Tyr Arg Phe Gly Gly His Tyr Leu Arg Val Lys Ala Pro Ala Lys Pro
```

299

```
                   140                      145                      150

gga gat gag ggc aag gtg gag cag ggc atg aag gac tcc aag tcc ctg   652
Gly Asp Glu Gly Lys Val Glu Gln Gly Met Lys Asp Ser Lys Ser Leu
            155                  160                  165

agt ttg ccg att ctg cgg cca gct ggg acc ggg ccc ccc gcc ctg gag   700
Ser Leu Pro Ile Leu Arg Pro Ala Gly Thr Gly Pro Pro Ala Leu Glu
            170                  175                  180

cgt gtg gac gcc cag agc cgc cgg gag agc ctg gac atc ttg gcc cct   748
Arg Val Asp Ala Gln Ser Arg Arg Glu Ser Leu Asp Ile Leu Ala Pro
            185                  190                  195

ggc cgc cgc cgc aag aac atg tcg gag ttc ctg ggg gag gcg agc atc   796
Gly Arg Arg Arg Lys Asn Met Ser Glu Phe Leu Gly Glu Ala Ser Ile
200                  205                  210                  215

ccc ggg cag gag ccc ccc acg ccc tcc agc tgc tct ctg ccc agc ggc   844
Pro Gly Gln Glu Pro Pro Thr Pro Ser Ser Cys Ser Leu Pro Ser Gly
                     220                  225                  230

agc agt ggc agc acc aac act ggc gac agc tgg aag aac cgg gcg gcc   892
Ser Ser Gly Ser Thr Asn Thr Gly Asp Ser Trp Lys Asn Arg Ala Ala
                235                  240                  245

agt cgc ttc agc ggc ttt ttc agc tcc ggc ccc agc acc agc gcc ttt   940
Ser Arg Phe Ser Gly Phe Phe Ser Ser Gly Pro Ser Thr Ser Ala Phe
            250                  255                  260

ggc cgg gag gta gac aag atg gag cag ctg gag ggc aag ctg cac acc   988
Gly Arg Glu Val Asp Lys Met Glu Gln Leu Glu Gly Lys Leu His Thr
            265                  270                  275

tac agc ctc ttc ggg ctg ccc agg ctg ccc cgg ggg ctg cgc ttc gac   1036
Tyr Ser Leu Phe Gly Leu Pro Arg Leu Pro Arg Gly Leu Arg Phe Asp
280                  285                  290                  295

cat gac tcc tgg gag gag gag tac gat gaa gac gag gat gag gac aat   1084
His Asp Ser Trp Glu Glu Glu Tyr Asp Glu Asp Glu Asp Glu Asp Asn
                     300                  305                  310

gcc tgc ctg agg ctg gag gac agc tgg cgg gag ctc att gat ggg cat   1132
Ala Cys Leu Arg Leu Glu Asp Ser Trp Arg Glu Leu Ile Asp Gly His
                     315                  320                  325

gag aag ctg acc cgg cgg cag tgc cac cag cag gag gcg gtg tgg gag   1180
Glu Lys Leu Thr Arg Arg Gln Cys His Gln Gln Glu Ala Val Trp Glu
            330                  335                  340

ctg ctg cac acg gag gcc tcc tac atc agg aaa ctg cgg gtg atc atc   1228
Leu Leu His Thr Glu Ala Ser Tyr Ile Arg Lys Leu Arg Val Ile Ile
            345                  350                  355

aac ctg ttc ctg tgc tgc ctc ctg aac ctg caa gag tca ggg ctg ctg   1276
Asn Leu Phe Leu Cys Cys Leu Leu Asn Leu Gln Glu Ser Gly Leu Leu
360                  365                  370                  375
```

300

```
tgt gag gtg gag gcg gag cgc ctg ttc agc aac atc ccg gag atc gcg    1324
Cys Glu Val Glu Ala Glu Arg Leu Phe Ser Asn Ile Pro Glu Ile Ala
            380                 385                 390

cag ctg cac cgc agg ctg tgg gct agc gtg atg gcg ccg gtg ctg gag    1372
Gln Leu His Arg Arg Leu Trp Ala Ser Val Met Ala Pro Val Leu Glu
            395                 400                 405

aag gcg cgg cgc acg cga gcg ctg cta cag ccc ggg gac ttc ctc aaa    1420
Lys Ala Arg Arg Thr Arg Ala Leu Leu Gln Pro Gly Asp Phe Leu Lys
            410                 415                 420

ggc ttc aag atg ttc ggc tcg ctc ttc aag ccc tac atc cgc tac tgc    1468
Gly Phe Lys Met Phe Gly Ser Leu Phe Lys Pro Tyr Ile Arg Tyr Cys
            425                 430                 435

atg gag gag gag ggc tgc atg gag tac atg cgc ggc ctg ctg cgc gac    1516
Met Glu Glu Glu Gly Cys Met Glu Tyr Met Arg Gly Leu Leu Arg Asp
440                 445                 450                 455

aac gac ctc ttc cgg gcc tac atc acg tgg gcg gag aag cac cca cag    1564
Asn Asp Leu Phe Arg Ala Tyr Ile Thr Trp Ala Glu Lys His Pro Gln
                460                 465                 470

tgc cag agg ctg aag ctg agc gac atg ctg gcc aaa ccc cac cag cgg    1612
Cys Gln Arg Leu Lys Leu Ser Asp Met Leu Ala Lys Pro His Gln Arg
            475                 480                 485

ctc acc aag tac ccg ctg ctg ctc aag tcg gtg ctg agg aag acc gag    1660
Leu Thr Lys Tyr Pro Leu Leu Leu Lys Ser Val Leu Arg Lys Thr Glu
            490                 495                 500

gag ccg cgc gcc aag gag gcc gtc gtc gcc atg atc ggc tcc gtg gag    1708
Glu Pro Arg Ala Lys Glu Ala Val Val Ala Met Ile Gly Ser Val Glu
            505                 510                 515

cgc ttc atc cac cac gtg aac gcg tgc atg cgg cag cgg cag gag cgg    1756
Arg Phe Ile His His Val Asn Ala Cys Met Arg Gln Arg Gln Glu Arg
520                 525                 530                 535

cag cgg ctg gcg gcc gtg gtg agc cgc atc gac gcc tac gag gtg gtg    1804
Gln Arg Leu Ala Ala Val Val Ser Arg Ile Asp Ala Tyr Glu Val Val
            540                 545                 550

gaa agc agc agc gac gaa gtg gac aag ctc ctg aag gaa ttt ctg cac    1852
Glu Ser Ser Ser Asp Glu Val Asp Lys Leu Leu Lys Glu Phe Leu His
            555                 560                 565

ctg gac ttg aca gcg ccc atc cct ggc gcc tcc ccg gag gag acg cgg    1900
Leu Asp Leu Thr Ala Pro Ile Pro Gly Ala Ser Pro Glu Glu Thr Arg
            570                 575                 580

cag ctg ctg ctg gag ggg agc ctg agg atg aag gag ggg aag gac agc    1948
Gln Leu Leu Leu Glu Gly Ser Leu Arg Met Lys Glu Gly Lys Asp Ser
            585                 590                 595
```

301

```
aag atg gat gtg tac tgc ttc ctc ttc acg gat ctg ctg ttg gtg acc    1996
Lys Met Asp Val Tyr Cys Phe Leu Phe Thr Asp Leu Leu Leu Val Thr
600             605                 610                 615

aaa gca gtg aag aag gca gag agg acc agg gtc atc agg cca ccc ctg    2044
Lys Ala Val Lys Lys Ala Glu Arg Thr Arg Val Ile Arg Pro Pro Leu
                620                 625                 630

ctc gtg gac aag att gtg tgc cgg gag cta cgg gac cct ggg tcc ttc    2092
Leu Val Asp Lys Ile Val Cys Arg Glu Leu Arg Asp Pro Gly Ser Phe
                635                 640                 645

ctc ctt atc tac ctg aat gag ttt cac agt gct gta ggg gcc tac acg    2140
Leu Leu Ile Tyr Leu Asn Glu Phe His Ser Ala Val Gly Ala Tyr Thr
                650                 655                 660

ttc cag gcc agt ggc cag gcc ttg tgc cgt ggc tgg gtg gac acc att    2188
Phe Gln Ala Ser Gly Gln Ala Leu Cys Arg Gly Trp Val Asp Thr Ile
                665                 670                 675

tac aat gcc cag aac cag ctg caa cag ctg cgt gca cag gag ccc cca    2236
Tyr Asn Ala Gln Asn Gln Leu Gln Gln Leu Arg Ala Gln Glu Pro Pro
680                 685                 690                 695

ggc agt cag cag ccc ctg cag agc ctg gaa gag gag gag gat gag cag    2284
Gly Ser Gln Gln Pro Leu Gln Ser Leu Glu Glu Glu Glu Asp Glu Gln
                700                 705                 710

gag gag gaa gag gag gag gag gag gag gag gag gaa ggc gag gac agt    2332
Glu Glu Glu Glu Glu Glu Glu Glu Glu Glu Glu Glu Gly Glu Asp Ser
                715                 720                 725

ggc act tca gct gcc agc tcc cct acc atc atg cgg aaa agc agc ggc    2380
Gly Thr Ser Ala Ala Ser Ser Pro Thr Ile Met Arg Lys Ser Ser Gly
                730                 735                 740

agc ccc gac tct cag cac tgt gcc tca gat ggc tcc acg gag acc ctg    2428
Ser Pro Asp Ser Gln His Cys Ala Ser Asp Gly Ser Thr Glu Thr Leu
                745                 750                 755

gcc atg gtt gtg gta gag cct ggg gac acg ctg tcc tcc ccc gag ttc    2476
Ala Met Val Val Val Glu Pro Gly Asp Thr Leu Ser Ser Pro Glu Phe
760                 765                 770                 775

gac agc ggt cct ttc agc tcc cag tct gat gag acc tct ctc agc acc    2524
Asp Ser Gly Pro Phe Ser Ser Gln Ser Asp Glu Thr Ser Leu Ser Thr
                780                 785                 790

act gcc tca tct gcc acg ccc acc agt gag ctg ctg ccc ctg ggt ccg    2572
Thr Ala Ser Ser Ala Thr Pro Thr Ser Glu Leu Leu Pro Leu Gly Pro
                795                 800                 805

gtg gac ggc cgc tcc tgc tcc atg gac tct gcc tac ggc acc ctc tcc    2620
Val Asp Gly Arg Ser Cys Ser Met Asp Ser Ala Tyr Gly Thr Leu Ser
                810                 815                 820

cca acc tcc tta caa gac ttt gtg gcc cca ggc cca atg gca gag cta    2668
```

302

```
Pro Thr Ser Leu Gln Asp Phe Val Ala Pro Gly Pro Met Ala Glu Leu
    825                 830                 835

gtg cct cgg gcc cca gag tcc cca cga gtt cct tcc cct cca ccc tcg   2716
Val Pro Arg Ala Pro Glu Ser Pro Arg Val Pro Ser Pro Pro Pro Ser
840                 845                 850                 855

ccc cgt ctc cgc cgc cgc acc cct gtc cag ctg ttg agc tgc ccg ccc   2764
Pro Arg Leu Arg Arg Arg Thr Pro Val Gln Leu Leu Ser Cys Pro Pro
                    860                 865                 870

cac ctg ctc aag tct aag tcc gag gcc agc ctc ctc cag ctg ctg gca   2812
His Leu Leu Lys Ser Lys Ser Glu Ala Ser Leu Leu Gln Leu Leu Ala
                875                 880                 885

ggg gct ggc acc cat ggg aca ccc tct gcc ccc agc cgc agc ctg tca   2860
Gly Ala Gly Thr His Gly Thr Pro Ser Ala Pro Ser Arg Ser Leu Ser
                890                 895                 900

gag ctc tgc ctg gct gtt cca gcc cca ggt att agg act cag ggc tcc   2908
Glu Leu Cys Leu Ala Val Pro Ala Pro Gly Ile Arg Thr Gln Gly Ser
        905                 910                 915

cct cag gaa gct ggg ccc agc tgg gat tgc cga ggg gcc cct agc cct   2956
Pro Gln Glu Ala Gly Pro Ser Trp Asp Cys Arg Gly Ala Pro Ser Pro
920                 925                 930                 935

ggc agc ggt cct ggg cta gtc ggc tgc ctg gcc ggg gaa cct gca ggc   3004
Gly Ser Gly Pro Gly Leu Val Gly Cys Leu Ala Gly Glu Pro Ala Gly
                940                 945                 950

tcc cac agg aag agg tgt gga gac ctg ccc tcg ggg gcc tct ccc agg   3052
Ser His Arg Lys Arg Cys Gly Asp Leu Pro Ser Gly Ala Ser Pro Arg
                955                 960                 965

gtc cag cct gag ccc cca cca ggg gtc tct gcc cag cac agg aag ctg   3100
Val Gln Pro Glu Pro Pro Pro Gly Val Ser Ala Gln His Arg Lys Leu
            970                 975                 980

acc ctg gcc cag ctc tac cga atc agg acc acc ctg ctg ctt aac tcc   3148
Thr Leu Ala Gln Leu Tyr Arg Ile Arg Thr Thr Leu Leu Leu Asn Ser
        985                 990                 995

acg ctc act gcc tcg gag gtc tgagcagagg gaggccccca agagtgccat      3199
Thr Leu Thr Ala Ser Glu Val
1000                1005

tgaccaagag acagcagaca gcctgcctcc tggggcgtgc cggcacctgc ttcagctact   3259

gcctcctgta tgcatgagcc ggatgctggg caggatccct gcctacgccc gggcccgatt   3319

tgcgctttgc cggactggat ggagtggagg aggcccaggc cacagtacca ccccacctgc   3379

ccaggcagcc cctcgtcacc tactccccga agttaccagc tcagctcgag tcttcagggc   3439

tgggctccta ggctgcccat cctacttcta ccctcactgg cctccagtgg gattcactcc   3499
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303

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tgccctgccc ccaccttccc agtcccacag gccacccctg gcttgggctg ggttctgtga 3559

agttacgtat ttattgagct tttggttctt ttataaagac ttgtctagac          3609
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<210> 158
<211> 1006
<212> PRT
<213> Homo sapiens

<400> 158

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Met His Tyr Asp Gly His Val Arg Phe Asp Leu Pro Pro Gln Gly Ser
 1               5                  10                  15

Val Leu Ala Arg Asn Val Ser Thr Arg Ser Cys Pro Pro Arg Thr Ser
                20                  25                  30

Pro Ala Val Asp Leu Glu Glu Glu Glu Glu Glu Ser Ser Val Asp Gly
            35                  40                  45

Lys Gly Asp Arg Lys Ser Thr Gly Leu Lys Leu Ser Lys Lys Lys Ala
        50                  55                  60

Arg Arg Arg His Thr Asp Asp Pro Ser Lys Glu Cys Phe Thr Leu Lys
65                  70                  75                  80

Phe Asp Leu Asn Val Asp Ile Glu Thr Glu Ile Val Pro Ala Met Lys
                85                  90                  95

Lys Lys Ser Leu Gly Glu Val Leu Leu Pro Val Phe Glu Arg Lys Gly
            100                 105                 110

Ile Ala Leu Gly Lys Val Asp Ile Tyr Leu Asp Gln Ser Asn Thr Pro
        115                 120                 125

Leu Ser Leu Thr Phe Glu Ala Tyr Arg Phe Gly Gly His Tyr Leu Arg
    130                 135                 140

Val Lys Ala Pro Ala Lys Pro Gly Asp Glu Gly Lys Val Glu Gln Gly
145                 150                 155                 160

Met Lys Asp Ser Lys Ser Leu Ser Leu Pro Ile Leu Arg Pro Ala Gly
                165                 170                 175

Thr Gly Pro Pro Ala Leu Glu Arg Val Asp Ala Gln Ser Arg Arg Glu
            180                 185                 190

Ser Leu Asp Ile Leu Ala Pro Gly Arg Arg Arg Lys Asn Met Ser Glu
        195                 200                 205

Phe Leu Gly Glu Ala Ser Ile Pro Gly Gln Glu Pro Pro Thr Pro Ser
    210                 215                 220

Ser Cys Ser Leu Pro Ser Gly Ser Ser Gly Ser Thr Asn Thr Gly Asp
225                 230                 235                 240

Ser Trp Lys Asn Arg Ala Ala Ser Arg Phe Ser Gly Phe Phe Ser Ser
```

304

```
                245                      250                      255

Gly Pro Ser Thr Ser Ala Phe Gly Arg Glu Val Asp Lys Met Glu Gln
            260                 265                 270

Leu Glu Gly Lys Leu His Thr Tyr Ser Leu Phe Gly Leu Pro Arg Leu
            275                 280                 285

Pro Arg Gly Leu Arg Phe Asp His Asp Ser Trp Glu Glu Glu Tyr Asp
            290             295                 300

Glu Asp Glu Asp Glu Asp Asn Ala Cys Leu Arg Leu Glu Asp Ser Trp
305                     310                 315                 320

Arg Glu Leu Ile Asp Gly His Glu Lys Leu Thr Arg Arg Gln Cys His
                325                 330                 335

Gln Gln Glu Ala Val Trp Glu Leu Leu His Thr Glu Ala Ser Tyr Ile
            340                 345                 350

Arg Lys Leu Arg Val Ile Ile Asn Leu Phe Leu Cys Cys Leu Leu Asn
            355                 360                 365

Leu Gln Glu Ser Gly Leu Leu Cys Glu Val Glu Ala Glu Arg Leu Phe
    370                 375                 380

Ser Asn Ile Pro Glu Ile Ala Gln Leu His Arg Arg Leu Trp Ala Ser
385                 390                 395                 400

Val Met Ala Pro Val Leu Glu Lys Ala Arg Arg Thr Arg Ala Leu Leu
            405                 410                 415

Gln Pro Gly Asp Phe Leu Lys Gly Phe Lys Met Phe Gly Ser Leu Phe
            420                 425                 430

Lys Pro Tyr Ile Arg Tyr Cys Met Glu Glu Glu Gly Cys Met Glu Tyr
        435                 440                 445

Met Arg Gly Leu Leu Arg Asp Asn Asp Leu Phe Arg Ala Tyr Ile Thr
    450                 455                 460

Trp Ala Glu Lys His Pro Gln Cys Gln Arg Leu Lys Leu Ser Asp Met
465             470                 475                 480

Leu Ala Lys Pro His Gln Arg Leu Thr Lys Tyr Pro Leu Leu Leu Lys
            485                 490                 495

Ser Val Leu Arg Lys Thr Glu Glu Pro Arg Ala Lys Glu Ala Val Val
            500                 505                 510

Ala Met Ile Gly Ser Val Glu Arg Phe Ile His His Val Asn Ala Cys
        515                 520                 525

Met Arg Gln Arg Gln Glu Arg Gln Arg Leu Ala Ala Val Val Ser Arg
    530                 535                 540

Ile Asp Ala Tyr Glu Val Val Glu Ser Ser Ser Asp Glu Val Asp Lys
```

305

```
           545                        550                      555                      560

Leu Leu Lys Glu Phe Leu His Leu Asp Leu Thr Ala Pro Ile Pro Gly
                565                      570                      575

Ala Ser Pro Glu Glu Thr Arg Gln Leu Leu Leu Glu Gly Ser Leu Arg
                580                      585                      590

Met Lys Glu Gly Lys Asp Ser Lys Met Asp Val Tyr Cys Phe Leu Phe
                595                      600                      605

Thr Asp Leu Leu Leu Val Thr Lys Ala Val Lys Lys Ala Glu Arg Thr
         610                      615                      620

Arg Val Ile Arg Pro Pro Leu Leu Val Asp Lys Ile Val Cys Arg Glu
625                          630                      635                      640

Leu Arg Asp Pro Gly Ser Phe Leu Leu Ile Tyr Leu Asn Glu Phe His
                645                      650                      655

Ser Ala Val Gly Ala Tyr Thr Phe Gln Ala Ser Gly Gln Ala Leu Cys
                660                      665                      670

Arg Gly Trp Val Asp Thr Ile Tyr Asn Ala Gln Asn Gln Leu Gln Gln
                675                      680                      685

Leu Arg Ala Gln Glu Pro Pro Gly Ser Gln Gln Pro Leu Gln Ser Leu
         690                      695                      700

Glu Glu Glu Glu Asp Glu Gln Glu Glu Glu Glu Glu Glu Glu Glu Glu
705                          710                      715                      720

Glu Glu Glu Gly Glu Asp Ser Gly Thr Ser Ala Ala Ser Ser Pro Thr
                725                      730                      735

Ile Met Arg Lys Ser Ser Gly Ser Pro Asp Ser Gln His Cys Ala Ser
                740                      745                      750

Asp Gly Ser Thr Glu Thr Leu Ala Met Val Val Val Glu Pro Gly Asp
                755                      760                      765

Thr Leu Ser Ser Pro Glu Phe Asp Ser Gly Pro Phe Ser Ser Gln Ser
         770                      775                      780

Asp Glu Thr Ser Leu Ser Thr Thr Ala Ser Ser Ala Thr Pro Thr Ser
785                          790                      795                      800

Glu Leu Leu Pro Leu Gly Pro Val Asp Gly Arg Ser Cys Ser Met Asp
                805                      810                      815

Ser Ala Tyr Gly Thr Leu Ser Pro Thr Ser Leu Gln Asp Phe Val Ala
                820                      825                      830

Pro Gly Pro Met Ala Glu Leu Val Pro Arg Ala Pro Glu Ser Pro Arg
                835                      840                      845

Val Pro Ser Pro Pro Pro Ser Pro Arg Leu Arg Arg Arg Thr Pro Val
```

306

```
                850                   855                  860

Gln Leu Leu Ser Cys Pro Pro His Leu Leu Lys Ser Lys Ser Glu Ala
865                 870                 875                 880

Ser Leu Leu Gln Leu Leu Ala Gly Ala Gly Thr His Gly Thr Pro Ser
                885                 890                 895

Ala Pro Ser Arg Ser Leu Ser Glu Leu Cys Leu Ala Val Pro Ala Pro
                900                 905                 910

Gly Ile Arg Thr Gln Gly Ser Pro Gln Glu Ala Gly Pro Ser Trp Asp
                915                 920                 925

Cys Arg Gly Ala Pro Ser Pro Gly Ser Gly Pro Gly Leu Val Gly Cys
        930                 935                 940

Leu Ala Gly Glu Pro Ala Gly Ser His Arg Lys Arg Cys Gly Asp Leu
945                 950                 955                 960

Pro Ser Gly Ala Ser Pro Arg Val Gln Pro Glu Pro Pro Pro Gly Val
                965                 970                 975

Ser Ala Gln His Arg Lys Leu Thr Leu Ala Gln Leu Tyr Arg Ile Arg
                980                 985                 990

Thr Thr Leu Leu Leu Asn Ser Thr Leu Thr Ala Ser Glu Val
            995                 1000                1005
```

<210> 159
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<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (93)..(3089)

<400> 159

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cactggcgcg atgcgggccg tcctctcggc tg atg ggt tgg aag ccc agc gag      113
                                    Met Gly Trp Lys Pro Ser Glu
                                     1               5

gct aga ggc cag tcc caa agt ctc cag gca tca ggg ctg cag ccc agg      161
Ala Arg Gly Gln Ser Gln Ser Leu Gln Ala Ser Gly Leu Gln Pro Arg
        10                  15                  20

agc ctc aag gcg gcc cgg cgg gcg act gga cgg ccg gac agg tcc cga      209
Ser Leu Lys Ala Ala Arg Arg Ala Thr Gly Arg Pro Asp Arg Ser Arg
     25                  30                  35

gca gcc ccg ccc aac atg gac cca gac ccc cag gcg ggc gtg cag gtg      257
Ala Ala Pro Pro Asn Met Asp Pro Asp Pro Gln Ala Gly Val Gln Val
```

```
        40                    45                       50                          55

ggc atg cgg gtg gtg cgc ggc gtg gac tgg aag tgg ggc cag cag gac   305
Gly Met Arg Val Val Arg Gly Val Asp Trp Lys Trp Gly Gln Gln Asp
                60                    65                   70

ggc ggc gag ggc ggc gtg ggc acg gtg gtg gag ctt ggc cgc cac ggc   353
Gly Gly Glu Gly Gly Val Gly Thr Val Val Glu Leu Gly Arg His Gly
                75                    80                   85

agc ccc tcg aca ccc gac cgc aca gtg gtc gtg cag tgg gac cag ggc   401
Ser Pro Ser Thr Pro Asp Arg Thr Val Val Val Gln Trp Asp Gln Gly
                90                    95                  100

acg cgc acc aac tac cgc gcc ggc tac cag ggc gcg cac gac ctg ctg   449
Thr Arg Thr Asn Tyr Arg Ala Gly Tyr Gln Gly Ala His Asp Leu Leu
    105                   110                  115

ctg tac gac aac gcc cag atc ggc gtc cgg cac ccc aac atc atc tgt   497
Leu Tyr Asp Asn Ala Gln Ile Gly Val Arg His Pro Asn Ile Ile Cys
120                   125                  130                  135

gac tgc tgc aag aag cac ggg ctg cgg ggg atg cgc tgg aag tgc cgt   545
Asp Cys Cys Lys Lys His Gly Leu Arg Gly Met Arg Trp Lys Cys Arg
                140                   145                  150

gtg tgc ctg gac tac gac ctc tgc acg cag tgc tac atg cac aac aag   593
Val Cys Leu Asp Tyr Asp Leu Cys Thr Gln Cys Tyr Met His Asn Lys
                155                   160                  165

cat gag ctc gcc cac gcc ttc gac cgc tac gag acc gct cac tcg cgc   641
His Glu Leu Ala His Ala Phe Asp Arg Tyr Glu Thr Ala His Ser Arg
                170                   175                  180

cct gtc aca ctg agt ccc cgc cag ggc ctc ccg agg atc cca cta agg   689
Pro Val Thr Leu Ser Pro Arg Gln Gly Leu Pro Arg Ile Pro Leu Arg
                185                   190                  195

ggc atc ttc cag gga gcg aag gtg gtg cga ggc ccc ttc tgg gag tgg   737
Gly Ile Phe Gln Gly Ala Lys Val Val Arg Gly Pro Phe Trp Glu Trp
200                   205                  210                  215

ggc tca cag gat gga ggg gaa ggg aaa ccg ggc cgt gtg gtg gac atc   785
Gly Ser Gln Asp Gly Gly Glu Gly Lys Pro Gly Arg Val Val Asp Ile
                220                   225                  230

cgt ggc tgg gat gtg gag aca ggc cgg agt gtg gcc agc gtg acg tgg   833
Arg Gly Trp Asp Val Glu Thr Gly Arg Ser Val Ala Ser Val Thr Trp
                235                   240                  245

gct gat ggt acc acc aat gtg tac cgt gtg ggc cac aag ggc aag gtg   881
Ala Asp Gly Thr Thr Asn Val Tyr Arg Val Gly His Lys Gly Lys Val
                250                   255                  260

gac ctc aag tgt gtg ggc gag gca gcg ggc ggc ttc tac tac aag gac   929
Asp Leu Lys Cys Val Gly Glu Ala Ala Gly Gly Phe Tyr Tyr Lys Asp
    265                   270                  275
```

308

```
cac ctc cca agg ctc ggc aag ccg gcg gag ctg cag cgc agg gtg agt   977
His Leu Pro Arg Leu Gly Lys Pro Ala Glu Leu Gln Arg Arg Val Ser
280             285             290             295

gct gac agc cag ccc ttc cag cac ggg gac aag gtc aag tgt ctg ctg   1025
Ala Asp Ser Gln Pro Phe Gln His Gly Asp Lys Val Lys Cys Leu Leu
                300             305             310

gac act gat gtc ctg cgg gag atg cag gaa ggc cac ggc ggc tgg aac   1073
Asp Thr Asp Val Leu Arg Glu Met Gln Glu Gly His Gly Gly Trp Asn
            315             320             325

ccc agg atg gcg gag ttt atc gga cag acg ggc acc gtg cat cgt atc   1121
Pro Arg Met Ala Glu Phe Ile Gly Gln Thr Gly Thr Val His Arg Ile
            330             335             340

acg gac cgc ggg gac gtg cgc gtg cag ttc aac cac gag acg cgc tgg   1169
Thr Asp Arg Gly Asp Val Arg Val Gln Phe Asn His Glu Thr Arg Trp
        345             350             355

acc ttc cac ccc ggg gcg ctc acc aag cac cac tcc ttc tgg gtg ggc   1217
Thr Phe His Pro Gly Ala Leu Thr Lys His His Ser Phe Trp Val Gly
360             365             370             375

gac gtg gtc cgg gtc atc ggc gac ctt gac aca gtg aag cgg ctg cag   1265
Asp Val Val Arg Val Ile Gly Asp Leu Asp Thr Val Lys Arg Leu Gln
                380             385             390

gct ggg cat ggc gag tgg acg gac gac atg gcc cct gcc ctg ggc cgc   1313
Ala Gly His Gly Glu Trp Thr Asp Asp Met Ala Pro Ala Leu Gly Arg
            395             400             405

gtc ggg aag gtg gtg aaa gtg ttt gga gac ggg aac ctg cgt gta gca   1361
Val Gly Lys Val Val Lys Val Phe Gly Asp Gly Asn Leu Arg Val Ala
            410             415             420

gtc gct ggt cag cgg tgg acc ttc agc ccc tcc tgc ctg gtg gcc tac   1409
Val Ala Gly Gln Arg Trp Thr Phe Ser Pro Ser Cys Leu Val Ala Tyr
        425             430             435

cgg ccc gag gag gat gcc aac ctg gac gtg gcc gag cgc gcc cgg gag   1457
Arg Pro Glu Glu Asp Ala Asn Leu Asp Val Ala Glu Arg Ala Arg Glu
440             445             450             455

aac aaa agc tca ctg agc gtg gcc ctg gac aag ctt cgg gcc cag aag   1505
Asn Lys Ser Ser Leu Ser Val Ala Leu Asp Lys Leu Arg Ala Gln Lys
                460             465             470

agt gac cca gag cac ccg gga agg ctg gtg gtg gag gtg gcg ctg ggt   1553
Ser Asp Pro Glu His Pro Gly Arg Leu Val Val Glu Val Ala Leu Gly
            475             480             485

aac gca gcc cgg gct ctg gac ctg ctg cgg agg cgc cca gag caa gtg   1601
Asn Ala Ala Arg Ala Leu Asp Leu Leu Arg Arg Arg Pro Glu Gln Val
        490             495             500
```

309

```
gac acc aag aac caa ggc agg acc gct ctg caa gtg gct gcc tac ctg      1649
Asp Thr Lys Asn Gln Gly Arg Thr Ala Leu Gln Val Ala Ala Tyr Leu
    505             510                 515

ggc cag gtg gag ttg ata cgg ctg ctg cta caa gcc agg gcg ggc gtg      1697
Gly Gln Val Glu Leu Ile Arg Leu Leu Leu Gln Ala Arg Ala Gly Val
520             525                 530                 535

gac ctg ccg gac gac gag ggc aac acg gca ctg cac tac gcg gcc ctg      1745
Asp Leu Pro Asp Asp Glu Gly Asn Thr Ala Leu His Tyr Ala Ala Leu
            540                 545                 550

ggg aac cag ccc gag gcc acc agg gtg ctc ctg agt gct ggg tgc cgg      1793
Gly Asn Gln Pro Glu Ala Thr Arg Val Leu Leu Ser Ala Gly Cys Arg
            555                 560                 565

gcg gac gcc atc aac agc acc cag agc aca gca ctg cac gtg gcc gtg      1841
Ala Asp Ala Ile Asn Ser Thr Gln Ser Thr Ala Leu His Val Ala Val
    570                 575                 580

cag agg ggc ttc ctg gag gtg gtg cgg gcc ctg tgt gag cgc ggc tgt      1889
Gln Arg Gly Phe Leu Glu Val Val Arg Ala Leu Cys Glu Arg Gly Cys
    585                 590                 595

gac gtc aac ctg ccc gac gcc cac tcg gac acg ccc ctg cac tcc gcc      1937
Asp Val Asn Leu Pro Asp Ala His Ser Asp Thr Pro Leu His Ser Ala
600                 605                 610                 615

atc tcg gcg ggc act gga gcc agc ggc att gtc gag gtc ctc acg gag      1985
Ile Ser Ala Gly Thr Gly Ala Ser Gly Ile Val Glu Val Leu Thr Glu
            620                 625                 630

gtg cca aac atc gat gtt acc gcc acc aac agc cag ggt ttc acc ctg      2033
Val Pro Asn Ile Asp Val Thr Ala Thr Asn Ser Gln Gly Phe Thr Leu
            635                 640                 645

ctg cac cat gcc tcc ctc aag ggt cac gcg cta gct gtg aga aag att      2081
Leu His His Ala Ser Leu Lys Gly His Ala Leu Ala Val Arg Lys Ile
            650                 655                 660

ctg gct cgg gcg cgg cag ctg gtg gac gcc aag aag gag gac ggc ttc      2129
Leu Ala Arg Ala Arg Gln Leu Val Asp Ala Lys Lys Glu Asp Gly Phe
    665                 670                 675

acg gcg ctg cat ctg gct gcc ctc aac aac cac cgc gag gtg gcc cag      2177
Thr Ala Leu His Leu Ala Ala Leu Asn Asn His Arg Glu Val Ala Gln
680                 685                 690                 695

atc ctc atc cgg gag ggc cgc tgt gac gtg aac gtg cgc aac cgg aag      2225
Ile Leu Ile Arg Glu Gly Arg Cys Asp Val Asn Val Arg Asn Arg Lys
            700                 705                 710

ctg cag tcc ccg ctg cat ctc gcc gtg caa cag gcc cac gtg ggg ctg      2273
Leu Gln Ser Pro Leu His Leu Ala Val Gln Gln Ala His Val Gly Leu
            715                 720                 725

gtg ccg cta ctg gtg gac gct ggg tgc agt gtc aac gcc gag gac gag      2321
Val Pro Leu Leu Val Asp Ala Gly Cys Ser Val Asn Ala Glu Asp Glu
```

310

```
Val Pro Leu Leu Val Asp Ala Gly Cys Ser Val Asn Ala Glu Asp Glu
        730                 735                 740
```

```
gag ggg gac aca gcc ctg cac gtg gcg ctg cag cgt cat cag ctg ctg     2369
Glu Gly Asp Thr Ala Leu His Val Ala Leu Gln Arg His Gln Leu Leu
        745                 750                 755
```

```
ccc ctg gtg gct gat ggg gcc ggg ggg gac cca ggg ccc ttg cag ctg     2417
Pro Leu Val Ala Asp Gly Ala Gly Gly Asp Pro Gly Pro Leu Gln Leu
760                 765                 770                 775
```

```
ctg tcc agg cta cag gcc tcg ggc ctc ccc ggc agc gcg gag ctg acg     2465
Leu Ser Arg Leu Gln Ala Ser Gly Leu Pro Gly Ser Ala Glu Leu Thr
                780                 785                 790
```

```
gtg ggc gcg gcg gtc gcc tgc ttc ctg gcg ctg gag ggc gcc gac gtg     2513
Val Gly Ala Ala Val Ala Cys Phe Leu Ala Leu Glu Gly Ala Asp Val
                795                 800                 805
```

```
agc tac acc aac cac cgc ggt cgg agc ccg ctg gac ctg gcc gcc gag     2561
Ser Tyr Thr Asn His Arg Gly Arg Ser Pro Leu Asp Leu Ala Ala Glu
        810                 815                 820
```

```
ggt cgc gtg ctc aag gcc ctt cag ggc tgc gcc cag cgc ttc cgg gag     2609
Gly Arg Val Leu Lys Ala Leu Gln Gly Cys Ala Gln Arg Phe Arg Glu
        825                 830                 835
```

```
cgg cag gcg ggc ggg ggc gcg gcc ccg ggc ccc agg caa acg ctc ggg     2657
Arg Gln Ala Gly Gly Gly Ala Ala Pro Gly Pro Arg Gln Thr Leu Gly
840                 845                 850                 855
```

```
acc ccc aac acc gtg acg aac ctg cac gtg ggc gcc gcg ccg ggg ccc     2705
Thr Pro Asn Thr Val Thr Asn Leu His Val Gly Ala Ala Pro Gly Pro
                860                 865                 870
```

```
gag gcc gct gag tgc ctg gtg tgc tcc gag ctg gcg ctg ctg gtg ctg     2753
Glu Ala Ala Glu Cys Leu Val Cys Ser Glu Leu Ala Leu Leu Val Leu
                875                 880                 885
```

```
ttc tcg ccg tgc cag cac cgc acc gtg tgt gag gag tgc gcg cgc agg     2801
Phe Ser Pro Cys Gln His Arg Thr Val Cys Glu Glu Cys Ala Arg Arg
                890                 895                 900
```

```
atg aag aag tgc atc agg tgc cag gtg gtc gtc agc aag aaa ctg cgc     2849
Met Lys Lys Cys Ile Arg Cys Gln Val Val Val Ser Lys Lys Leu Arg
        905                 910                 915
```

```
cca gac ggc tct gag gtg gcg agc gcc gcc ccc gcc ccc ggc ccg ccg     2897
Pro Asp Gly Ser Glu Val Ala Ser Ala Ala Pro Ala Pro Gly Pro Pro
920                 925                 930                 935
```

```
cgc cag ctg gtg gag gag ctg cag agc cgc tac cgg cag atg gag gaa     2945
Arg Gln Leu Val Glu Glu Leu Gln Ser Arg Tyr Arg Gln Met Glu Glu
                940                 945                 950
```

```
cgc atc acc tgc ccc atc tgc atc gac agg cac atc cgc ctc gtg ttc     2993
Arg Ile Thr Cys Pro Ile Cys Ile Asp Arg His Ile Arg Leu Val Phe
```

311

```
              955                    960                    965

cag tgc ggc cac ggc gca tgc gcc ccc tgc ggc tcc gcg ctc agc gcc   3041
Gln Cys Gly His Gly Ala Cys Ala Pro Cys Gly Ser Ala Leu Ser Ala
        970                    975                    980

tgc ccc atc tgc cgc cag ccc atc cgc gac cgc atc cag atc ttc gtg   3089
Cys Pro Ile Cys Arg Gln Pro Ile Arg Asp Arg Ile Gln Ile Phe Val
    985                    990                    995

tgagccgcgc cgtccgccgc gcccgagctg ccttcgcgtg cccccgccct gtgttttata  3149

aaaagaaaga ttctcggat                                               3168


<210> 160
<211> 999
<212> PRT
<213> Homo sapiens

<400> 160
Met Gly Trp Lys Pro Ser Glu Ala Arg Gly Gln Ser Gln Ser Leu Gln
  1               5                   10                  15

Ala Ser Gly Leu Gln Pro Arg Ser Leu Lys Ala Ala Arg Arg Ala Thr
            20                  25                  30

Gly Arg Pro Asp Arg Ser Arg Ala Ala Pro Pro Asn Met Asp Pro Asp
          35                  40                  45

Pro Gln Ala Gly Val Gln Val Gly Met Arg Val Val Arg Gly Val Asp
    50                  55                  60

Trp Lys Trp Gly Gln Gln Asp Gly Gly Glu Gly Gly Val Gly Thr Val
65                  70                  75                  80

Val Glu Leu Gly Arg His Gly Ser Pro Ser Thr Pro Asp Arg Thr Val
              85                  90                  95

Val Val Gln Trp Asp Gln Gly Thr Arg Thr Asn Tyr Arg Ala Gly Tyr
            100                 105                 110

Gln Gly Ala His Asp Leu Leu Leu Tyr Asp Asn Ala Gln Ile Gly Val
          115                 120                 125

Arg His Pro Asn Ile Ile Cys Asp Cys Cys Lys Lys His Gly Leu Arg
    130                 135                 140

Gly Met Arg Trp Lys Cys Arg Val Cys Leu Asp Tyr Asp Leu Cys Thr
145                 150                 155                 160

Gln Cys Tyr Met His Asn Lys His Glu Leu Ala His Ala Phe Asp Arg
                165                 170                 175

Tyr Glu Thr Ala His Ser Arg Pro Val Thr Leu Ser Pro Arg Gln Gly
            180                 185                 190
```

312

Leu Pro Arg Ile Pro Leu Arg Gly Ile Phe Gln Gly Ala Lys Val Val
        195   200   205

Arg Gly Pro Phe Trp Glu Trp Gly Ser Gln Asp Gly Gly Glu Gly Lys
        210   215   220

Pro Gly Arg Val Val Asp Ile Arg Gly Trp Asp Val Glu Thr Gly Arg
225   230   235   240

Ser Val Ala Ser Val Thr Trp Ala Asp Gly Thr Thr Asn Val Tyr Arg
                245   250   255

Val Gly His Lys Gly Lys Val Asp Leu Lys Cys Val Gly Glu Ala Ala
            260   265   270

Gly Gly Phe Tyr Tyr Lys Asp His Leu Pro Arg Leu Gly Lys Pro Ala
        275   280   285

Glu Leu Gln Arg Arg Val Ser Ala Asp Ser Gln Pro Phe Gln His Gly
        290   295   300

Asp Lys Val Lys Cys Leu Leu Asp Thr Asp Val Leu Arg Glu Met Gln
305   310   315   320

Glu Gly His Gly Gly Trp Asn Pro Arg Met Ala Glu Phe Ile Gly Gln
                325   330   335

Thr Gly Thr Val His Arg Ile Thr Asp Arg Gly Asp Val Arg Val Gln
            340   345   350

Phe Asn His Glu Thr Arg Trp Thr Phe His Pro Gly Ala Leu Thr Lys
        355   360   365

His His Ser Phe Trp Val Gly Asp Val Val Arg Val Ile Gly Asp Leu
    370   375   380

Asp Thr Val Lys Arg Leu Gln Ala Gly His Gly Glu Trp Thr Asp Asp
385   390   395   400

Met Ala Pro Ala Leu Gly Arg Val Gly Lys Val Val Lys Val Phe Gly
                405   410   415

Asp Gly Asn Leu Arg Val Ala Val Ala Gly Gln Arg Trp Thr Phe Ser
        420   425   430

Pro Ser Cys Leu Val Ala Tyr Arg Pro Glu Glu Asp Ala Asn Leu Asp
        435   440   445

Val Ala Glu Arg Ala Arg Glu Asn Lys Ser Ser Leu Ser Val Ala Leu
    450   455   460

Asp Lys Leu Arg Ala Gln Lys Ser Asp Pro Glu His Pro Gly Arg Leu
465   470   475   480

Val Val Glu Val Ala Leu Gly Asn Ala Ala Arg Ala Leu Asp Leu Leu
            485   490   495

313

```
Arg Arg Arg Pro Glu Gln Val Asp Thr Lys Asn Gln Gly Arg Thr Ala
        500                 505                 510

Leu Gln Val Ala Ala Tyr Leu Gly Gln Val Glu Leu Ile Arg Leu Leu
        515                 520                 525

Leu Gln Ala Arg Ala Gly Val Asp Leu Pro Asp Asp Glu Gly Asn Thr
        530                 535                 540

Ala Leu His Tyr Ala Ala Leu Gly Asn Gln Pro Glu Ala Thr Arg Val
545                 550                 555                 560

Leu Leu Ser Ala Gly Cys Arg Ala Asp Ala Ile Asn Ser Thr Gln Ser
                565                 570                 575

Thr Ala Leu His Val Ala Val Gln Arg Gly Phe Leu Glu Val Val Arg
            580                 585                 590

Ala Leu Cys Glu Arg Gly Cys Asp Val Asn Leu Pro Asp Ala His Ser
        595                 600                 605

Asp Thr Pro Leu His Ser Ala Ile Ser Ala Gly Thr Gly Ala Ser Gly
    610                 615                 620

Ile Val Glu Val Leu Thr Glu Val Pro Asn Ile Asp Val Thr Ala Thr
625                 630                 635                 640

Asn Ser Gln Gly Phe Thr Leu Leu His His Ala Ser Leu Lys Gly His
                645                 650                 655

Ala Leu Ala Val Arg Lys Ile Leu Ala Arg Ala Arg Gln Leu Val Asp
            660                 665                 670

Ala Lys Lys Glu Asp Gly Phe Thr Ala Leu His Leu Ala Ala Leu Asn
        675                 680                 685

Asn His Arg Glu Val Ala Gln Ile Leu Ile Arg Glu Gly Arg Cys Asp
    690                 695                 700

Val Asn Val Arg Asn Arg Lys Leu Gln Ser Pro Leu His Leu Ala Val
705                 710                 715                 720

Gln Gln Ala His Val Gly Leu Val Pro Leu Leu Val Asp Ala Gly Cys
            725                 730                 735

Ser Val Asn Ala Glu Asp Glu Glu Gly Asp Thr Ala Leu His Val Ala
            740                 745                 750

Leu Gln Arg His Gln Leu Leu Pro Leu Val Ala Asp Gly Ala Gly Gly
        755                 760                 765

Asp Pro Gly Pro Leu Gln Leu Leu Ser Arg Leu Gln Ala Ser Gly Leu
    770                 775                 780

Pro Gly Ser Ala Glu Leu Thr Val Gly Ala Ala Val Ala Cys Phe Leu
785                 790                 795                 800
```

314

```
Ala Leu Glu Gly Ala Asp Val Ser Tyr Thr Asn His Arg Gly Arg Ser
            805                 810                 815

Pro Leu Asp Leu Ala Ala Glu Gly Arg Val Leu Lys Ala Leu Gln Gly
            820                 825                 830

Cys Ala Gln Arg Phe Arg Glu Arg Gln Ala Gly Gly Gly Ala Ala Pro
            835                 840                 845

Gly Pro Arg Gln Thr Leu Gly Thr Pro Asn Thr Val Thr Asn Leu His
            850                 855                 860

Val Gly Ala Ala Pro Gly Pro Glu Ala Ala Glu Cys Leu Val Cys Ser
865                 870                 875                 880

Glu Leu Ala Leu Leu Val Leu Phe Ser Pro Cys Gln His Arg Thr Val
            885                 890                 895

Cys Glu Glu Cys Ala Arg Arg Met Lys Lys Cys Ile Arg Cys Gln Val
            900                 905                 910

Val Val Ser Lys Lys Leu Arg Pro Asp Gly Ser Glu Val Ala Ser Ala
            915                 920                 925

Ala Pro Ala Pro Gly Pro Pro Arg Gln Leu Val Glu Glu Leu Gln Ser
            930                 935                 940

Arg Tyr Arg Gln Met Glu Glu Arg Ile Thr Cys Pro Ile Cys Ile Asp
945                 950                 955                 960

Arg His Ile Arg Leu Val Phe Gln Cys Gly His Gly Ala Cys Ala Pro
            965                 970                 975

Cys Gly Ser Ala Leu Ser Ala Cys Pro Ile Cys Arg Gln Pro Ile Arg
            980                 985                 990

Asp Arg Ile Gln Ile Phe Val
            995
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cactggcgcg atgcgggccg tcctctcggc tg atg ggt tgg aag ccc agc gag   113
                                     Met Gly Trp Lys Pro Ser Glu
                                      1   5

315

```
gct aga ggc cag tcc caa agt ctc cag gca tca ggg ctg cag ccc agg   161
Ala Arg Gly Gln Ser Gln Ser Leu Gln Ala Ser Gly Leu Gln Pro Arg
        10              15              20


agc ctc aag gcg gcc cgg cgg gcg act gga cgg ccg gac agg tcc cga   209
Ser Leu Lys Ala Ala Arg Arg Ala Thr Gly Arg Pro Asp Arg Ser Arg
        25              30              35


gca gcc ccg ccc aac atg gac cca gac ccc cag gcg ggc gtg cag gtg   257
Ala Ala Pro Pro Asn Met Asp Pro Asp Pro Gln Ala Gly Val Gln Val
40              45              50              55


ggc atg cgg gtg gtg cgc ggc gtg gac tgg aag tgg ggc cag cag gac   305
Gly Met Arg Val Val Arg Gly Val Asp Trp Lys Trp Gly Gln Gln Asp
                60              65              70


ggc ggc gag ggc ggc gtg ggc acg gtg gtg gag ctt ggc cgc cac ggc   353
Gly Gly Glu Gly Gly Val Gly Thr Val Val Glu Leu Gly Arg His Gly
            75              80              85


agc ccc tcg aca ccc gac cgc aca gtg gtc gtg cag tgg gac cag ggc   401
Ser Pro Ser Thr Pro Asp Arg Thr Val Val Val Gln Trp Asp Gln Gly
            90              95              100


acg cgc acc aac tac cgc gcc ggc tac cag ggc gcg cac gac ctg ctg   449
Thr Arg Thr Asn Tyr Arg Ala Gly Tyr Gln Gly Ala His Asp Leu Leu
        105             110             115


ctg tac gac aac gcc cag atc ggc gtc cgg cac ccc aac atc atc tgt   497
Leu Tyr Asp Asn Ala Gln Ile Gly Val Arg His Pro Asn Ile Ile Cys
120             125             130             135


gac tgc tgc aag aag cac ggg ctg cgg ggg atg cgc tgg aag tgc cgt   545
Asp Cys Cys Lys Lys His Gly Leu Arg Gly Met Arg Trp Lys Cys Arg
            140             145             150


gtg tgc ctg gac tac gac ctc tgc acg cag tgc tac atg cac aac aag   593
Val Cys Leu Asp Tyr Asp Leu Cys Thr Gln Cys Tyr Met His Asn Lys
            155             160             165


cat gag ctc gcc cac gcc ttc gac cgc tac gag acc gct cac tcg cgc   641
His Glu Leu Ala His Ala Phe Asp Arg Tyr Glu Thr Ala His Ser Arg
        170             175             180


cct gtc aca ctg agt ccc cgc cag ggc ctc ccg agg atc cca cta agg   689
Pro Val Thr Leu Ser Pro Arg Gln Gly Leu Pro Arg Ile Pro Leu Arg
        185             190             195


ggc atc ttc cag gga gcg aag gtg gtg cga ggc ccc ttc tgg gag tgg   737
Gly Ile Phe Gln Gly Ala Lys Val Val Arg Gly Pro Phe Trp Glu Trp
200             205             210             215


ggc tca cag gat gga ggg gaa ggg aaa ccg ggc cgt gtg gtg gac atc   785
Gly Ser Gln Asp Gly Gly Glu Gly Lys Pro Gly Arg Val Val Asp Ile
                220             225             230


cgt ggc tgg gat gtg gag aca ggc cgg agt gtg gcc agc gtg acg tgg   833
```

316

```
Arg Gly Trp Asp Val Glu Thr Gly Arg Ser Val Ala Ser Val Thr Trp
        235             240             245

gct gat ggt acc acc aat gtg tac cgt gtg ggc cac aag ggc aag gtg    881
Ala Asp Gly Thr Thr Asn Val Tyr Arg Val Gly His Lys Gly Lys Val
        250             255             260

gac ctc aag tgt gtg ggc gag gca gcg ggc ggc ttc tac tac aag gac    929
Asp Leu Lys Cys Val Gly Glu Ala Ala Gly Gly Phe Tyr Tyr Lys Asp
        265             270             275

cac ctc cca agg ctc ggc aag ccg gcg gag ctg cag cgc agg gtg agt    977
His Leu Pro Arg Leu Gly Lys Pro Ala Glu Leu Gln Arg Arg Val Ser
280             285             290             295

gct gac agc cag ccc ttc cag cac ggg gac aag gtc aag tgt ctg ctg   1025
Ala Asp Ser Gln Pro Phe Gln His Gly Asp Lys Val Lys Cys Leu Leu
            300             305             310

gac act gat gtc ctg cgg gag atg cag gaa ggc cac ggc ggc tgg aac   1073
Asp Thr Asp Val Leu Arg Glu Met Gln Glu Gly His Gly Gly Trp Asn
        315             320             325

ccc agg atg gcg gag ttt atc gga cag acg ggc acc gtg cat cgt atc   1121
Pro Arg Met Ala Glu Phe Ile Gly Gln Thr Gly Thr Val His Arg Ile
        330             335             340

acg gac cgc ggg gac gtg cgc gtg cag ttc aac cac gag acg cgc tgg   1169
Thr Asp Arg Gly Asp Val Arg Val Gln Phe Asn His Glu Thr Arg Trp
        345             350             355

acc ttc cac ccc ggg gcg ctc acc aag cac cac tcc ttc tgg gtg ggc   1217
Thr Phe His Pro Gly Ala Leu Thr Lys His His Ser Phe Trp Val Gly
360             365             370             375

gac gtg gtc cgg gtc atc ggc gac ctt gac aca gtg aag cgg ctg cag   1265
Asp Val Val Arg Val Ile Gly Asp Leu Asp Thr Val Lys Arg Leu Gln
            380             385             390

gct ggg cat ggc gag tgg acg gac gac atg gcc cct gcc ctg ggc cgc   1313
Ala Gly His Gly Glu Trp Thr Asp Asp Met Ala Pro Ala Leu Gly Arg
            395             400             405

gtc ggg aag gtg gtg aaa gtg ttt gga gac ggg aac ctg cgt gta gca   1361
Val Gly Lys Val Val Lys Val Phe Gly Asp Gly Asn Leu Arg Val Ala
            410             415             420

gtc gct ggt cag cgg tgg acc ttc agc ccc tcc tgc ctg gtg gcc tac   1409
Val Ala Gly Gln Arg Trp Thr Phe Ser Pro Ser Cys Leu Val Ala Tyr
            425             430             435

cgg ccc gag gag gat gcc aac ctg gac gtg gcc gag cgc gcc cgg gag   1457
Arg Pro Glu Glu Asp Ala Asn Leu Asp Val Ala Glu Arg Ala Arg Glu
440             445             450             455

aac aaa agc tca ctg agc gtg gcc ctg gac aag ctt cgg gcc cag aag   1505
Asn Lys Ser Ser Leu Ser Val Ala Leu Asp Lys Leu Arg Ala Gln Lys
```

317

```
                    460                    465                    470

agt gac cca gag cac ccg gga agg ctg gtg gtg gag gtg gcg ctg ggt    1553
Ser Asp Pro Glu His Pro Gly Arg Leu Val Val Glu Val Ala Leu Gly
            475                 480                 485

aac gca gcc cgg gct ctg gac ctg ctg cgg agg cgc cca gag caa gtg    1601
Asn Ala Ala Arg Ala Leu Asp Leu Leu Arg Arg Arg Pro Glu Gln Val
            490                 495                 500

gac acc aag aac caa ggc agg acc gct ctg caa gtg gct gcc tac ctg    1649
Asp Thr Lys Asn Gln Gly Arg Thr Ala Leu Gln Val Ala Ala Tyr Leu
            505                 510                 515

ggc cag gtg gag ttg ata cgg ctg ctg cta caa gcc agg gcg ggc gtg    1697
Gly Gln Val Glu Leu Ile Arg Leu Leu Leu Gln Ala Arg Ala Gly Val
520                 525                 530                 535

gac ctg ccg gac gac gag ggc aac acg gca ctg cac tac gcg gcc ctg    1745
Asp Leu Pro Asp Asp Glu Gly Asn Thr Ala Leu His Tyr Ala Ala Leu
                540                 545                 550

ggg aac cag ccc gag gcc acc agg gtg ctc ctg agt gct ggg tgc cgg    1793
Gly Asn Gln Pro Glu Ala Thr Arg Val Leu Leu Ser Ala Gly Cys Arg
            555                 560                 565

gcg gac gcc atc aac agc acc cag agc aca gca ctg cac gtg gcc gtg    1841
Ala Asp Ala Ile Asn Ser Thr Gln Ser Thr Ala Leu His Val Ala Val
            570                 575                 580

cag agg ggc ttc ctg gag gtg gtg cgg gcc ctg tgt gag cgc ggc tgt    1889
Gln Arg Gly Phe Leu Glu Val Val Arg Ala Leu Cys Glu Arg Gly Cys
        585                 590                 595

gac gtc aac ctg ccc gac gcc cac tcg gac acg ccc ctg cac tcc gcc    1937
Asp Val Asn Leu Pro Asp Ala His Ser Asp Thr Pro Leu His Ser Ala
600                 605                 610                 615

atc tcg gcg ggc act gga gcc agc ggc att gtc gag gtc ctc acg gag    1985
Ile Ser Ala Gly Thr Gly Ala Ser Gly Ile Val Glu Val Leu Thr Glu
                620                 625                 630

gtg cca aac atc gat gtt acc gcc acc aac agc cag ggt ttc acc ctg    2033
Val Pro Asn Ile Asp Val Thr Ala Thr Asn Ser Gln Gly Phe Thr Leu
                635                 640                 645

ctg cac cat gcc tcc ctc aag ggt cac gcg cta gct gtg aga aag att    2081
Leu His His Ala Ser Leu Lys Gly His Ala Leu Ala Val Arg Lys Ile
            650                 655                 660

ctg gct cgg gcg cgg cag ctg gtg gac gcc aag aag gag gac ggc ttc    2129
Leu Ala Arg Ala Arg Gln Leu Val Asp Ala Lys Lys Glu Asp Gly Phe
        665                 670                 675

acg gcg ctg cat ctg gct gcc ctc aac aac cac cgc gag gtg gcc cag    2177
Thr Ala Leu His Leu Ala Ala Leu Asn Asn His Arg Glu Val Ala Gln
680                 685                 690                 695
```

318

```
atc ctc atc cgg gag ggc cgc tgt gac gtg aac gtg cgc aac cgg aag    2225
Ile Leu Ile Arg Glu Gly Arg Cys Asp Val Asn Val Arg Asn Arg Lys
            700                 705             710

ctg cag tcc ccg ctg cat ctc gcc gtg caa cag gcc cac gtg ggg ctg    2273
Leu Gln Ser Pro Leu His Leu Ala Val Gln Gln Ala His Val Gly Leu
            715                 720             725

gtg ccg cta ctg gtg gac gct ggg tgc agt gtc aac gcc gag gac gag    2321
Val Pro Leu Leu Val Asp Ala Gly Cys Ser Val Asn Ala Glu Asp Glu
            730                 735             740

gag ggg gac aca gcc ctg cac gtg gcg ctg cag cgt cat cag ctg ctg    2369
Glu Gly Asp Thr Ala Leu His Val Ala Leu Gln Arg His Gln Leu Leu
            745                 750             755

ccc ctg gtg gct gat ggg gcc ggg ggg gac cca ggg ccc ttg cag ctg    2417
Pro Leu Val Ala Asp Gly Ala Gly Gly Asp Pro Gly Pro Leu Gln Leu
760             765                 770                 775

ctg tcc agg cta cag gcc tcg ggc ctc ccc ggc agc gcg gag ctg acg    2465
Leu Ser Arg Leu Gln Ala Ser Gly Leu Pro Gly Ser Ala Glu Leu Thr
            780                 785             790

gtg ggc gcg gcg gtc gcc tgc ttc ctg gcg ctg gag ggc gcc gac gtg    2513
Val Gly Ala Ala Val Ala Cys Phe Leu Ala Leu Glu Gly Ala Asp Val
            795                 800             805

agc tac acc aac cac cgc ggt cgg agc ccg ctg gac ctg gcc gcc gag    2561
Ser Tyr Thr Asn His Arg Gly Arg Ser Pro Leu Asp Leu Ala Ala Glu
            810                 815             820

ggt cgc gtg ctc aag gcc ctt cag ggc tgc gcc cag cgc ttc cgg gag    2609
Gly Arg Val Leu Lys Ala Leu Gln Gly Cys Ala Gln Arg Phe Arg Glu
            825                 830             835

cgg cag gcg ggc ggg ggc gcg gcc ccg ggc ccc agg caa acg ctc ggg    2657
Arg Gln Ala Gly Gly Gly Ala Ala Pro Gly Pro Arg Gln Thr Leu Gly
840             845                 850                 855

acc ccc aac acc gtg acg aac ctg cac gtg ggc gcc gcg ccg ggg ccc    2705
Thr Pro Asn Thr Val Thr Asn Leu His Val Gly Ala Ala Pro Gly Pro
            860                 865             870

gag gcc gct gag tgc ctg gtg tgc tcc gag ctg gcg ctg ctg gtg ctg    2753
Glu Ala Ala Glu Cys Leu Val Cys Ser Glu Leu Ala Leu Leu Val Leu
            875                 880             885

ttc tcg ccg tgc cag cac cgc acc gtg tgt gag gag tgc gcg cgc agg    2801
Phe Ser Pro Cys Gln His Arg Thr Val Cys Glu Glu Cys Ala Arg Arg
            890                 895             900

atg aag aag tgc atc agg tgc cag gtg gtc gtc agc aag aaa ctg cgc    2849
Met Lys Lys Cys Ile Arg Cys Gln Val Val Val Ser Lys Lys Leu Arg
            905                 910             915
```

319

```
cca gac ggc tct gag gtg gcg agc gcc gcc ccc gcc ccc ggc ccg ccg   2897
Pro Asp Gly Ser Glu Val Ala Ser Ala Ala Pro Ala Pro Gly Pro Pro
920                 925                 930                 935

cgc cag ctg gtg gag gag ctg cag agc cgc tac cgg cag atg gag gaa   2945
Arg Gln Leu Val Glu Glu Leu Gln Ser Arg Tyr Arg Gln Met Glu Glu
                940                 945                 950

cgc atc acc tgc ccc atc tgc atc gac agc cac atc cgc ctc gtg ttc   2993
Arg Ile Thr Cys Pro Ile Cys Ile Asp Ser His Ile Arg Leu Val Phe
                955                 960                 965

cag tgc ggc cac ggc gca tgc gcc ccc tgc ggc tcc gcg ctc agc gcc   3041
Gln Cys Gly His Gly Ala Cys Ala Pro Cys Gly Ser Ala Leu Ser Ala
            970                 975                 980

tgc ccc atc tgc cgc cag ccc atc cgc gac cgc atc cag atc ttc gtg   3089
Cys Pro Ile Cys Arg Gln Pro Ile Arg Asp Arg Ile Gln Ile Phe Val
            985                 990                 995

tgagccgcgc cgtccgccgc gcccgagctg ccttcgcgtg cccccgccct gtgttttata   3149

aaaagaaaga ttctcggat                                              3168
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Ala Ser Gly Leu Gln Pro Arg Ser Leu Lys Ala Ala Arg Arg Ala Thr
             20                  25                  30

Gly Arg Pro Asp Arg Ser Arg Ala Ala Pro Pro Asn Met Asp Pro Asp
         35                  40                  45

Pro Gln Ala Gly Val Gln Val Gly Met Arg Val Val Arg Gly Val Asp
     50                  55                  60

Trp Lys Trp Gly Gln Gln Asp Gly Gly Glu Gly Gly Val Gly Thr Val
 65                  70                  75                  80

Val Glu Leu Gly Arg His Gly Ser Pro Ser Thr Pro Asp Arg Thr Val
                 85                  90                  95

Val Val Gln Trp Asp Gln Gly Thr Arg Thr Asn Tyr Arg Ala Gly Tyr
             100                 105                 110

Gln Gly Ala His Asp Leu Leu Leu Tyr Asp Asn Ala Gln Ile Gly Val
         115                 120                 125

Arg His Pro Asn Ile Ile Cys Asp Cys Cys Lys Lys His Gly Leu Arg
     130                 135                 140
```

320

```
Gly Met Arg Trp Lys Cys Arg Val Cys Leu Asp Tyr Asp Leu Cys Thr
145             150             155             160

Gln Cys Tyr Met His Asn Lys His Glu Leu Ala His Ala Phe Asp Arg
                165             170             175

Tyr Glu Thr Ala His Ser Arg Pro Val Thr Leu Ser Pro Arg Gln Gly
            180             185             190

Leu Pro Arg Ile Pro Leu Arg Gly Ile Phe Gln Gly Ala Lys Val Val
            195             200             205

Arg Gly Pro Phe Trp Glu Trp Gly Ser Gln Asp Gly Gly Glu Gly Lys
            210             215             220

Pro Gly Arg Val Val Asp Ile Arg Gly Trp Asp Val Glu Thr Gly Arg
225             230             235             240

Ser Val Ala Ser Val Thr Trp Ala Asp Gly Thr Thr Asn Val Tyr Arg
            245             250             255

Val Gly His Lys Gly Lys Val Asp Leu Lys Cys Val Gly Glu Ala Ala
            260             265             270

Gly Gly Phe Tyr Tyr Lys Asp His Leu Pro Arg Leu Gly Lys Pro Ala
            275             280             285

Glu Leu Gln Arg Arg Val Ser Ala Asp Ser Gln Pro Phe Gln His Gly
            290             295             300

Asp Lys Val Lys Cys Leu Leu Asp Thr Asp Val Leu Arg Glu Met Gln
305             310             315             320

Glu Gly His Gly Gly Trp Asn Pro Arg Met Ala Glu Phe Ile Gly Gln
            325             330             335

Thr Gly Thr Val His Arg Ile Thr Asp Arg Gly Asp Val Arg Val Gln
            340             345             350

Phe Asn His Glu Thr Arg Trp Thr Phe His Pro Gly Ala Leu Thr Lys
            355             360             365

His His Ser Phe Trp Val Gly Asp Val Val Arg Val Ile Gly Asp Leu
            370             375             380

Asp Thr Val Lys Arg Leu Gln Ala Gly His Gly Glu Trp Thr Asp Asp
385             390             395             400

Met Ala Pro Ala Leu Gly Arg Val Gly Lys Val Val Lys Val Phe Gly
            405             410             415

Asp Gly Asn Leu Arg Val Ala Val Ala Gly Gln Arg Trp Thr Phe Ser
            420             425             430

Pro Ser Cys Leu Val Ala Tyr Arg Pro Glu Glu Asp Ala Asn Leu Asp
            435             440             445
```

321

```
Val Ala Glu Arg Ala Arg Glu Asn Lys Ser Ser Leu Ser Val Ala Leu
    450             455             460

Asp Lys Leu Arg Ala Gln Lys Ser Asp Pro Glu His Pro Gly Arg Leu
465             470             475             480

Val Val Glu Val Ala Leu Gly Asn Ala Ala Arg Ala Leu Asp Leu Leu
            485             490             495

Arg Arg Arg Pro Glu Gln Val Asp Thr Lys Asn Gln Gly Arg Thr Ala
            500             505             510

Leu Gln Val Ala Ala Tyr Leu Gly Gln Val Glu Leu Ile Arg Leu Leu
        515             520             525

Leu Gln Ala Arg Ala Gly Val Asp Leu Pro Asp Asp Glu Gly Asn Thr
    530             535             540

Ala Leu His Tyr Ala Ala Leu Gly Asn Gln Pro Glu Ala Thr Arg Val
545             550             555             560

Leu Leu Ser Ala Gly Cys Arg Ala Asp Ala Ile Asn Ser Thr Gln Ser
            565             570             575

Thr Ala Leu His Val Ala Val Gln Arg Gly Phe Leu Glu Val Val Arg
        580             585             590

Ala Leu Cys Glu Arg Gly Cys Asp Val Asn Leu Pro Asp Ala His Ser
        595             600             605

Asp Thr Pro Leu His Ser Ala Ile Ser Ala Gly Thr Gly Ala Ser Gly
    610             615             620

Ile Val Glu Val Leu Thr Glu Val Pro Asn Ile Asp Val Thr Ala Thr
625             630             635             640

Asn Ser Gln Gly Phe Thr Leu Leu His His Ala Ser Leu Lys Gly His
            645             650             655

Ala Leu Ala Val Arg Lys Ile Leu Ala Arg Ala Arg Gln Leu Val Asp
            660             665             670

Ala Lys Lys Glu Asp Gly Phe Thr Ala Leu His Leu Ala Ala Leu Asn
        675             680             685

Asn His Arg Glu Val Ala Gln Ile Leu Ile Arg Glu Gly Arg Cys Asp
    690             695             700

Val Asn Val Arg Asn Arg Lys Leu Gln Ser Pro Leu His Leu Ala Val
705             710             715             720

Gln Gln Ala His Val Gly Leu Val Pro Leu Leu Val Asp Ala Gly Cys
            725             730             735

Ser Val Asn Ala Glu Asp Glu Glu Gly Asp Thr Ala Leu His Val Ala
            740             745             750
```

322

```
Leu Gln Arg His Gln Leu Leu Pro Leu Val Ala Asp Gly Ala Gly Gly
        755             760             765

Asp Pro Gly Pro Leu Gln Leu Leu Ser Arg Leu Gln Ala Ser Gly Leu
    770             775             780

Pro Gly Ser Ala Glu Leu Thr Val Gly Ala Ala Val Ala Cys Phe Leu
785             790             795             800

Ala Leu Glu Gly Ala Asp Val Ser Tyr Thr Asn His Arg Gly Arg Ser
            805             810             815

Pro Leu Asp Leu Ala Ala Glu Gly Arg Val Leu Lys Ala Leu Gln Gly
            820             825             830

Cys Ala Gln Arg Phe Arg Glu Arg Gln Ala Gly Gly Gly Ala Ala Pro
        835             840             845

Gly Pro Arg Gln Thr Leu Gly Thr Pro Asn Thr Val Thr Asn Leu His
    850             855             860

Val Gly Ala Ala Pro Gly Pro Glu Ala Ala Glu Cys Leu Val Cys Ser
865             870             875             880

Glu Leu Ala Leu Leu Val Leu Phe Ser Pro Cys Gln His Arg Thr Val
            885             890             895

Cys Glu Glu Cys Ala Arg Arg Met Lys Lys Cys Ile Arg Cys Gln Val
        900             905             910

Val Val Ser Lys Lys Leu Arg Pro Asp Gly Ser Glu Val Ala Ser Ala
        915             920             925

Ala Pro Ala Pro Gly Pro Pro Arg Gln Leu Val Glu Glu Leu Gln Ser
    930             935             940

Arg Tyr Arg Gln Met Glu Glu Arg Ile Thr Cys Pro Ile Cys Ile Asp
945             950             955             960

Ser His Ile Arg Leu Val Phe Gln Cys Gly His Gly Ala Cys Ala Pro
            965             970             975

Cys Gly Ser Ala Leu Ser Ala Cys Pro Ile Cys Arg Gln Pro Ile Arg
            980             985             990

Asp Arg Ile Gln Ile Phe Val
            995
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<220>

323

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tcccgtcgcc aatccccgcc gtcccgggcc atg atc gcc tgg cgt ctg ccc ttg 114
                                          Met Ile Ala Trp Arg Leu Pro Leu
                                   1   5

tgc gtg ctc ttg gtg gcc tcc gtc gag agc cac ctg ggg gcc ctg ggg 162
Cys Val Leu Leu Val Ala Ser Val Glu Ser His Leu Gly Ala Leu Gly
    10   15   20

ccc aag aac gtc tcg cag aaa gac gcg gag ttt gag cgc acc tac gcg 210
Pro Lys Asn Val Ser Gln Lys Asp Ala Glu Phe Glu Arg Thr Tyr Ala
 25   30   35   40

gac gac gtc aac agc gag ctg gtc aac atc tac acc ttc aac cac acc 258
Asp Asp Val Asn Ser Glu Leu Val Asn Ile Tyr Thr Phe Asn His Thr
             45   50   55

gtg acc cgc aac cgg acc gag ggt gtg cga gtg tct gtg aat gtc ctg 306
Val Thr Arg Asn Arg Thr Glu Gly Val Arg Val Ser Val Asn Val Leu
           60   65   70

aac aag cag aaa ggg gcg cct ttg ctg ttc gtg gtc cgc cag aag gag 354
Asn Lys Gln Lys Gly Ala Pro Leu Leu Phe Val Val Arg Gln Lys Glu
           75   80   85

gct gtt gtg tcc ttc cag gtg ccc cta atc ctt cga gga ctg tat cag 402
Ala Val Val Ser Phe Gln Val Pro Leu Ile Leu Arg Gly Leu Tyr Gln
    90   95   100

cgg aag tac ctc tac caa aaa gtg gaa cga act ctg tgt cag ccc ccc 450
Arg Lys Tyr Leu Tyr Gln Lys Val Glu Arg Thr Leu Cys Gln Pro Pro
105   110   115   120

acc aag aat gag tct gag atc cag ttt ttc tat gtg gac gtg tct acc 498
Thr Lys Asn Glu Ser Glu Ile Gln Phe Phe Tyr Val Asp Val Ser Thr
             125   130   135

ctg tca ccc gtc aat acc act tac cag ctc cga gtc aac cgt gtg gac 546
Leu Ser Pro Val Asn Thr Thr Tyr Gln Leu Arg Val Asn Arg Val Asp
           140   145   150

aat ttt gtg ctc agg act gga gag ctg ttt acc ttt aat acc act gca 594
Asn Phe Val Leu Arg Thr Gly Glu Leu Phe Thr Phe Asn Thr Thr Ala
          155   160   165

gcc cag ccc cag tac ttc aaa tac gag ttt cct gat ggt gtg gac tcg 642
Ala Gln Pro Gln Tyr Phe Lys Tyr Glu Phe Pro Asp Gly Val Asp Ser
    170   175   180

gta att gtc aag gtg acc tcc aag aag gcc ttc ccc tgc tca gtc atc 690
Val Ile Val Lys Val Thr Ser Lys Lys Ala Phe Pro Cys Ser Val Ile
185   190   195   200

324

```
tcc atc cag gat gtc ctg tgc cct gtc tat gat ctg gac aac agt gta    738
Ser Ile Gln Asp Val Leu Cys Pro Val Tyr Asp Leu Asp Asn Ser Val
            205                 210                 215

gcc ttc att ggc atg tac cag acg atg act aag aag gca gcc atc act    786
Ala Phe Ile Gly Met Tyr Gln Thr Met Thr Lys Lys Ala Ala Ile Thr
            220                 225                 230

gtg cag cgg aaa gac ttc ccc agc aac agc ttc tat gtg gtg gtg gta    834
Val Gln Arg Lys Asp Phe Pro Ser Asn Ser Phe Tyr Val Val Val Val
            235                 240                 245

gtg aag act gag gac cag gcc tgc gga ggg tcc ttg ccc ttc tac cct    882
Val Lys Thr Glu Asp Gln Ala Cys Gly Gly Ser Leu Pro Phe Tyr Pro
            250                 255                 260

ttt gtg gaa gat gag cca gtg gat caa ggg cac cgt cag aaa aca ctg    930
Phe Val Glu Asp Glu Pro Val Asp Gln Gly His Arg Gln Lys Thr Leu
265                 270                 275                 280

tca gtg ctg gtc tct cag gct gtc aca tct gag gcc tat gtt ggt ggg    978
Ser Val Leu Val Ser Gln Ala Val Thr Ser Glu Ala Tyr Val Gly Gly
            285                 290                 295

atg ctc ttt tgc ctg ggc ata ttc ttg tcc ttc tac ctg ctg act gtg    1026
Met Leu Phe Cys Leu Gly Ile Phe Leu Ser Phe Tyr Leu Leu Thr Val
            300                 305                 310

ctg ctg gcc tgt tgg gag aac tgg agg caa agg aag aag acc ttg ctg    1074
Leu Leu Ala Cys Trp Glu Asn Trp Arg Gln Arg Lys Lys Thr Leu Leu
            315                 320                 325

gtg gcc ata gac cga gcc tgc cca gaa agt ggt cac gct cgg gtc ttg    1122
Val Ala Ile Asp Arg Ala Cys Pro Glu Ser Gly His Ala Arg Val Leu
            330                 335                 340

gct gat tca ttt cct ggc agt gcc cct tac gag ggt tac aac tat ggc    1170
Ala Asp Ser Phe Pro Gly Ser Ala Pro Tyr Glu Gly Tyr Asn Tyr Gly
345                 350                 355                 360

tcc ttt gaa aat ggt tcc gga tcc act gac ggg ttg gtt gaa agc gca    1218
Ser Phe Glu Asn Gly Ser Gly Ser Thr Asp Gly Leu Val Glu Ser Ala
                365                 370                 375

ggt tca ggg gac ctc tcc tac agt tac cag ggg cac gac cag ttc aag    1266
Gly Ser Gly Asp Leu Ser Tyr Ser Tyr Gln Gly His Asp Gln Phe Lys
            380                 385                 390

cgg cgc ctt ccc tct ggc cag atg cgg cag ctg tgc att gcc atg gac    1314
Arg Arg Leu Pro Ser Gly Gln Met Arg Gln Leu Cys Ile Ala Met Asp
            395                 400                 405

cgc tcc ttt gac gca gtg ggt cct cgg cct cga ctg gac tcc atg agc    1362
Arg Ser Phe Asp Ala Val Gly Pro Arg Pro Arg Leu Asp Ser Met Ser
            410                 415                 420
```

325

```
tcc gtg gaa gag gat gac tac gac acg ctg act gac atc gac tca gac    1410
Ser Val Glu Glu Asp Asp Tyr Asp Thr Leu Thr Asp Ile Asp Ser Asp
425             430             435             440

aaa aac gtc att cga acc aag caa tac ctc tgt gtg gct gat ctg gca    1458
Lys Asn Val Ile Arg Thr Lys Gln Tyr Leu Cys Val Ala Asp Leu Ala
                445             450             455

cga aag gac aaa cgt gtt ttg cgg aaa aag tac cag att tac ttc tgg    1506
Arg Lys Asp Lys Arg Val Leu Arg Lys Lys Tyr Gln Ile Tyr Phe Trp
            460             465             470

aac ata gcc acc att gcg gtc ttc tac gca ctt cct gtg gtg cag ctg    1554
Asn Ile Ala Thr Ile Ala Val Phe Tyr Ala Leu Pro Val Val Gln Leu
        475             480             485

gtg atc acc tac cag acg gtg gtg aat gtc aca ggg aac cag gac atc    1602
Val Ile Thr Tyr Gln Thr Val Val Asn Val Thr Gly Asn Gln Asp Ile
        490             495             500

tgc tac tac aac ttc ctc tgt gcc cac ccg ctg ggc aac ctc agc gcc    1650
Cys Tyr Tyr Asn Phe Leu Cys Ala His Pro Leu Gly Asn Leu Ser Ala
505             510             515             520

ttc aac aac atc ctc agc aac ttg ggg tac atc ctg ctg ggg ctg ctc    1698
Phe Asn Asn Ile Leu Ser Asn Leu Gly Tyr Ile Leu Leu Gly Leu Leu
                525             530             535

ttc ctg ctc atc atc ctg cag cga gag atc aat cat aac cgg gcc ctg    1746
Phe Leu Leu Ile Ile Leu Gln Arg Glu Ile Asn His Asn Arg Ala Leu
            540             545             550

ctg cgg aat gac ctc tat gct ctg gag tgt ggg atc ccc aaa cac ttt    1794
Leu Arg Asn Asp Leu Tyr Ala Leu Glu Cys Gly Ile Pro Lys His Phe
        555             560             565

ggt ctg ttt tac gcc atg ggc aca gca ctg atg atg gag ggg cta ctt    1842
Gly Leu Phe Tyr Ala Met Gly Thr Ala Leu Met Met Glu Gly Leu Leu
        570             575             580

agt gcc tgt tac cac gtc tgc ccc aac tac acc aac ttc cag ttt gat    1890
Ser Ala Cys Tyr His Val Cys Pro Asn Tyr Thr Asn Phe Gln Phe Asp
585             590             595             600

acc tcc ttc atg tac atg att gct ggc ctc tgc atg ctg aag ctc tac    1938
Thr Ser Phe Met Tyr Met Ile Ala Gly Leu Cys Met Leu Lys Leu Tyr
            605             610             615

cag aag cgg cac cca gat atc aac gcc agt gcc tac agt gca tat gcc    1986
Gln Lys Arg His Pro Asp Ile Asn Ala Ser Ala Tyr Ser Ala Tyr Ala
            620             625             630

tgc ttg gcc atc gtc atc ttc ttc tcc gtt ctg ggc gtg gtg ttt ggc    2034
Cys Leu Ala Ile Val Ile Phe Phe Ser Val Leu Gly Val Val Phe Gly
        635             640             645

aaa ggg aac acg gcc ttc tgg att gtc ttc tcc gtc att cac atc atc    2082
```

326

```
Lys Gly Asn Thr Ala Phe Trp Ile Val Phe Ser Val Ile His Ile Ile
    650                 655             660

tcc acc ctg ctc ctc agc act cag ctc tat tac atg ggc cgc tgg aag    2130
Ser Thr Leu Leu Leu Ser Thr Gln Leu Tyr Tyr Met Gly Arg Trp Lys
665                 670             675                 680

ctg gac ttc ggg atc ttc cgc cgc atc ctc cat gtg ctc tac aca gac    2178
Leu Asp Phe Gly Ile Phe Arg Arg Ile Leu His Val Leu Tyr Thr Asp
                685             690             695

tgc atc cgg cag tgc agc ggg ccc ctt tac acg gac cgc atg gtg ctt    2226
Cys Ile Arg Gln Cys Ser Gly Pro Leu Tyr Thr Asp Arg Met Val Leu
            700             705             710

ctg gtc atg ggc aac att atc aac tgg tcg ctg gct gca tac gga ctc    2274
Leu Val Met Gly Asn Ile Ile Asn Trp Ser Leu Ala Ala Tyr Gly Leu
            715             720             725

atc atg cgc ccc aat gac ttt gct tcc tac ttg ctg gca att ggc atc    2322
Ile Met Arg Pro Asn Asp Phe Ala Ser Tyr Leu Leu Ala Ile Gly Ile
    730             735             740

tgc aac ctg ctg ctt tat ttc gcc ttc tac atc atc atg aag ctc cgg    2370
Cys Asn Leu Leu Leu Tyr Phe Ala Phe Tyr Ile Ile Met Lys Leu Arg
745             750             755             760

agc ggc gag agg atc aag ctc atc cct ctg ctt tgc atc gtc tgc acc    2418
Ser Gly Glu Arg Ile Lys Leu Ile Pro Leu Leu Cys Ile Val Cys Thr
            765             770             775

tcc gtg gtc tgg ggc ttc gcg ctc ttc ttc ttc cag gga ctg agc    2466
Ser Val Val Trp Gly Phe Ala Leu Phe Phe Phe Gln Gly Leu Ser
            780             785             790

acg tgg cag aaa acc ccc gca gag tcc agg gag cac aac cgc gac tgc    2514
Thr Trp Gln Lys Thr Pro Ala Glu Ser Arg Glu His Asn Arg Asp Cys
            795             800             805

atc ctc ctc gac ttc ttt gat gac cac gat atc tgg cac ttc ctg tcc    2562
Ile Leu Leu Asp Phe Phe Asp Asp His Asp Ile Trp His Phe Leu Ser
    810             815             820

tcc att gcc atg ttt ggg tcc ttc ctg gtt ttg ctg acg ttg gat gac    2610
Ser Ile Ala Met Phe Gly Ser Phe Leu Val Leu Leu Thr Leu Asp Asp
825             830             835             840

gac ttg gac aca gta cag cgg gac aag atc tat gtc ttc tagcagcatc    2659
Asp Leu Asp Thr Val Gln Arg Asp Lys Ile Tyr Val Phe
            845             850

tgtggtccag gcttcacctc acgggcctag cgcctgcctc tgcatcacct gccagttgcc 2719

acaagaacac cacgggtgtg agtcccagct ctgctgccca gcattggatg tcgtggcaag 2779

acagcgagat tccagcccag gcctgactca ggacagttcc tggtggcact gagccttgga 2839
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327

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gttgcctctg cggaggagga ggcctgctcc gcattcccca gacactggcc aaattgctgc 2899

tttcttctca gtgttgggtc ctccccagga ccctagtctg tccatctgtc ttgtttatcc 2959

actggctctc catttgtccc tttggagagg aaggtgggaa ggcaatgtcc tgtcccattt 3019

catgccttgc attctgccca tcccttccct cctctcagct taggacacac agccctttct 3079

tcttcccatg ctctgtccag gaccacagtc tggtgcctga ttctttgtcc atcaccagga 3139

cctaagctct ccctgggtct gtagctggct gctatcactg cccactctga cctgccagga 3199

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ctgcccaaga atgtctagag gccacggaac ggtgccaagc acacagtccc ttttgcctct 3559

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agaagaggcg ggtctgggtc tttgtttctg agctttgttc tatgttcctc catgctacgg 3979

ttgcaattgt tttctatgaa cgagtacatt caataaagac aaccagacct gg          4031
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<400> 164

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Met Ile Ala Trp Arg Leu Pro Leu Cys Val Leu Leu Val Ala Ser Val
 1               5                  10                  15

Glu Ser His Leu Gly Ala Leu Gly Pro Lys Asn Val Ser Gln Lys Asp
             20                  25                  30

Ala Glu Phe Glu Arg Thr Tyr Ala Asp Asp Val Asn Ser Glu Leu Val
         35                  40                  45

Asn Ile Tyr Thr Phe Asn His Thr Val Thr Arg Asn Arg Thr Glu Gly
```

328

```
          50                      55                      60
Val Arg Val Ser Val Asn Val Leu Asn Lys Gln Lys Gly Ala Pro Leu
65                      70                      75                      80

Leu Phe Val Val Arg Gln Lys Glu Ala Val Val Ser Phe Gln Val Pro
                    85                      90                      95

Leu Ile Leu Arg Gly Leu Tyr Gln Arg Lys Tyr Leu Tyr Gln Lys Val
                100                     105                     110

Glu Arg Thr Leu Cys Gln Pro Pro Thr Lys Asn Glu Ser Glu Ile Gln
                115                     120                     125

Phe Phe Tyr Val Asp Val Ser Thr Leu Ser Pro Val Asn Thr Thr Tyr
130                     135                     140

Gln Leu Arg Val Asn Arg Val Asp Asn Phe Val Leu Arg Thr Gly Glu
145                     150                     155                     160

Leu Phe Thr Phe Asn Thr Thr Ala Ala Gln Pro Gln Tyr Phe Lys Tyr
                    165                     170                     175

Glu Phe Pro Asp Gly Val Asp Ser Val Ile Val Lys Val Thr Ser Lys
                180                     185                     190

Lys Ala Phe Pro Cys Ser Val Ile Ser Ile Gln Asp Val Leu Cys Pro
                195                     200                     205

Val Tyr Asp Leu Asp Asn Ser Val Ala Phe Ile Gly Met Tyr Gln Thr
210                     215                     220

Met Thr Lys Lys Ala Ala Ile Thr Val Gln Arg Lys Asp Phe Pro Ser
225                     230                     235                     240

Asn Ser Phe Tyr Val Val Val Val Lys Thr Glu Asp Gln Ala Cys
                    245                     250                     255

Gly Gly Ser Leu Pro Phe Tyr Pro Phe Val Glu Asp Glu Pro Val Asp
                260                     265                     270

Gln Gly His Arg Gln Lys Thr Leu Ser Val Leu Val Ser Gln Ala Val
                275                     280                     285

Thr Ser Glu Ala Tyr Val Gly Gly Met Leu Phe Cys Leu Gly Ile Phe
                290                     295                     300

Leu Ser Phe Tyr Leu Leu Thr Val Leu Leu Ala Cys Trp Glu Asn Trp
305                     310                     315                     320

Arg Gln Arg Lys Lys Thr Leu Leu Val Ala Ile Asp Arg Ala Cys Pro
                325                     330                     335

Glu Ser Gly His Ala Arg Val Leu Ala Asp Ser Phe Pro Gly Ser Ala
                340                     345                     350

Pro Tyr Glu Gly Tyr Asn Tyr Gly Ser Phe Glu Asn Gly Ser Gly Ser
```

329

```
          355                   360                   365

Thr Asp Gly Leu Val Glu Ser Ala Gly Ser Gly Asp Leu Ser Tyr Ser
    370                   375                   380

Tyr Gln Gly His Asp Gln Phe Lys Arg Arg Leu Pro Ser Gly Gln Met
385                   390                   395                   400

Arg Gln Leu Cys Ile Ala Met Asp Arg Ser Phe Asp Ala Val Gly Pro
            405                   410                   415

Arg Pro Arg Leu Asp Ser Met Ser Ser Val Glu Glu Asp Asp Tyr Asp
            420                   425                   430

Thr Leu Thr Asp Ile Asp Ser Asp Lys Asn Val Ile Arg Thr Lys Gln
            435                   440                   445

Tyr Leu Cys Val Ala Asp Leu Ala Arg Lys Asp Lys Arg Val Leu Arg
    450                   455                   460

Lys Lys Tyr Gln Ile Tyr Phe Trp Asn Ile Ala Thr Ile Ala Val Phe
465                   470                   475                   480

Tyr Ala Leu Pro Val Val Gln Leu Val Ile Thr Tyr Gln Thr Val Val
            485                   490                   495

Asn Val Thr Gly Asn Gln Asp Ile Cys Tyr Tyr Asn Phe Leu Cys Ala
            500                   505                   510

His Pro Leu Gly Asn Leu Ser Ala Phe Asn Asn Ile Leu Ser Asn Leu
            515                   520                   525

Gly Tyr Ile Leu Leu Gly Leu Leu Phe Leu Leu Ile Ile Leu Gln Arg
    530                   535                   540

Glu Ile Asn His Asn Arg Ala Leu Leu Arg Asn Asp Leu Tyr Ala Leu
545                   550                   555                   560

Glu Cys Gly Ile Pro Lys His Phe Gly Leu Phe Tyr Ala Met Gly Thr
            565                   570                   575

Ala Leu Met Met Glu Gly Leu Leu Ser Ala Cys Tyr His Val Cys Pro
            580                   585                   590

Asn Tyr Thr Asn Phe Gln Phe Asp Thr Ser Phe Met Tyr Met Ile Ala
            595                   600                   605

Gly Leu Cys Met Leu Lys Leu Tyr Gln Lys Arg His Pro Asp Ile Asn
    610                   615                   620

Ala Ser Ala Tyr Ser Ala Tyr Ala Cys Leu Ala Ile Val Ile Phe Phe
625                   630                   635                   640

Ser Val Leu Gly Val Val Phe Gly Lys Gly Asn Thr Ala Phe Trp Ile
            645                   650                   655

Val Phe Ser Val Ile His Ile Ile Ser Thr Leu Leu Leu Ser Thr Gln
```

330

```
            660                    665                    670

Leu Tyr Tyr Met Gly Arg Trp Lys Leu Asp Phe Gly Ile Phe Arg Arg
        675                680                685

Ile Leu His Val Leu Tyr Thr Asp Cys Ile Arg Gln Cys Ser Gly Pro
    690                695                700

Leu Tyr Thr Asp Arg Met Val Leu Leu Val Met Gly Asn Ile Ile Asn
705                710                715                720

Trp Ser Leu Ala Ala Tyr Gly Leu Ile Met Arg Pro Asn Asp Phe Ala
                725                730                735

Ser Tyr Leu Leu Ala Ile Gly Ile Cys Asn Leu Leu Leu Tyr Phe Ala
                740                745                750

Phe Tyr Ile Ile Met Lys Leu Arg Ser Gly Glu Arg Ile Lys Leu Ile
        755                760                765

Pro Leu Leu Cys Ile Val Cys Thr Ser Val Val Trp Gly Phe Ala Leu
    770                775                780

Phe Phe Phe Phe Gln Gly Leu Ser Thr Trp Gln Lys Thr Pro Ala Glu
785                790                795                800

Ser Arg Glu His Asn Arg Asp Cys Ile Leu Leu Asp Phe Phe Asp Asp
                805                810                815

His Asp Ile Trp His Phe Leu Ser Ser Ile Ala Met Phe Gly Ser Phe
                820                825                830

Leu Val Leu Leu Thr Leu Asp Asp Asp Leu Asp Thr Val Gln Arg Asp
        835                840                845

Lys Ile Tyr Val Phe
    850


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<220>
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gccactgccg ccctgccggg gcc atg ttc gct ctg ggc ttg ccc ttc ttg gtg 113
                        Met Phe Ala Leu Gly Leu Pro Phe Leu Val
                         1                   5                   10

ctc ttg gtg gcc tcg gtc gag agc cat ctg ggg gtt ctg ggg ccc aag    161
```

```
Leu Leu Val Ala Ser Val Glu Ser His Leu Gly Val Leu Gly Pro Lys
              15                  20                  25

aac gtc tcg cag aaa gac gcc gag ttt gag cgc acc tac gtg gac gag    209
Asn Val Ser Gln Lys Asp Ala Glu Phe Glu Arg Thr Tyr Val Asp Glu
              30                  35                  40

gtc aac agc gag ctg gtc aac atc tac acc ttc aac cat act gtg acc    257
Val Asn Ser Glu Leu Val Asn Ile Tyr Thr Phe Asn His Thr Val Thr
              45                  50                  55

cgc aac agg aca gag ggc gtg cgt gtg tct gtg aac gtc ctg aac aag    305
Arg Asn Arg Thr Glu Gly Val Arg Val Ser Val Asn Val Leu Asn Lys
          60                  65                  70

cag aag ggg gcg ccg ttg ctg ttt gtg gtc cgc cag aag gag gct gtg    353
Gln Lys Gly Ala Pro Leu Leu Phe Val Val Arg Gln Lys Glu Ala Val
 75                  80                  85                  90

gtg tcc ttc cag gtg ccc cta atc ctg cga ggg atg ttt cag cgc aag    401
Val Ser Phe Gln Val Pro Leu Ile Leu Arg Gly Met Phe Gln Arg Lys
                  95                  100                 105

tac ctc tac caa aaa gtg gaa cga acc ctg tgt cag ccc ccc acc aag    449
Tyr Leu Tyr Gln Lys Val Glu Arg Thr Leu Cys Gln Pro Pro Thr Lys
              110                 115                 120

aat gag tcg gag att cag ttc ttc tac gtg gat gtg tcc acc ctg tca    497
Asn Glu Ser Glu Ile Gln Phe Phe Tyr Val Asp Val Ser Thr Leu Ser
              125                 130                 135

cca gtc aac acc aca tac cag ctc cgg gtc agc cgc atg gac gat ttt    545
Pro Val Asn Thr Thr Tyr Gln Leu Arg Val Ser Arg Met Asp Asp Phe
              140                 145                 150

gtg ctc agg act ggg gag cag ttc agc ttc aat acc aca gca gca cag    593
Val Leu Arg Thr Gly Glu Gln Phe Ser Phe Asn Thr Thr Ala Ala Gln
155                 160                 165                 170

ccc cag tac ttc aag tat gag ttc cct gaa ggc gtg gac tcg gta att    641
Pro Gln Tyr Phe Lys Tyr Glu Phe Pro Glu Gly Val Asp Ser Val Ile
              175                 180                 185

gtc aag gtg acc tcc aac aag gcc ttc ccc tgc tca gtc atc tcc att    689
Val Lys Val Thr Ser Asn Lys Ala Phe Pro Cys Ser Val Ile Ser Ile
              190                 195                 200

cag gat gtg ctg tgt cct gtc tat gac ctg gac aac aac gta gcc ttc    737
Gln Asp Val Leu Cys Pro Val Tyr Asp Leu Asp Asn Asn Val Ala Phe
              205                 210                 215

atc ggc atg tac cag acg atg acc aag aag gcg gcc atc acc gta cag    785
Ile Gly Met Tyr Gln Thr Met Thr Lys Lys Ala Ala Ile Thr Val Gln
              220                 225                 230

cgc aaa gac ttc ccc agc aac agc ttt tat gtg gtg gtg gtg gtg aag    833
Arg Lys Asp Phe Pro Ser Asn Ser Phe Tyr Val Val Val Val Val Lys
```

332

```
           235                     240                     245                     250
acc gaa gac caa gcc tgc ggg ggc tcc ctg cct ttc tac ccc ttc gca     881
Thr Glu Asp Gln Ala Cys Gly Gly Ser Leu Pro Phe Tyr Pro Phe Ala
                255                     260                     265

gaa gat gaa ccg gtc gat caa ggg cac cgc cag aaa acc ctg tca gtg     929
Glu Asp Glu Pro Val Asp Gln Gly His Arg Gln Lys Thr Leu Ser Val
            270                     275                     280

ctg gtg tct caa gca gtc acg tct gag gca tac gtc agt ggg atg ctc     977
Leu Val Ser Gln Ala Val Thr Ser Glu Ala Tyr Val Ser Gly Met Leu
            285                     290                     295

ttt tgc ctg ggt ata ttt ctc tcc ttt tac ctg ctg acc gtc ctc ctg    1025
Phe Cys Leu Gly Ile Phe Leu Ser Phe Tyr Leu Leu Thr Val Leu Leu
        300                     305                     310

gcc tgc tgg gag aac tgg agg cag aag aag aag acc ctg ctg gtg gcc    1073
Ala Cys Trp Glu Asn Trp Arg Gln Lys Lys Lys Thr Leu Leu Val Ala
315                     320                     325                     330

att gac cga gcc tgc cca gaa agc ggt cac cct cga gtc ctg gct gat    1121
Ile Asp Arg Ala Cys Pro Glu Ser Gly His Pro Arg Val Leu Ala Asp
                335                     340                     345

tct ttt cct ggc agt tcc cct tat gag ggt tac aac tat ggc tcc ttt    1169
Ser Phe Pro Gly Ser Ser Pro Tyr Glu Gly Tyr Asn Tyr Gly Ser Phe
            350                     355                     360

gag aat gtt tct gga tct acc gat ggt ctg gtt gac agc gct ggc act    1217
Glu Asn Val Ser Gly Ser Thr Asp Gly Leu Val Asp Ser Ala Gly Thr
            365                     370                     375

ggg gac ctc tct tac ggt tac cag ggg cac gac cag ttc aag cgg cgc    1265
Gly Asp Leu Ser Tyr Gly Tyr Gln Gly His Asp Gln Phe Lys Arg Arg
            380                     385                     390

ctc ccc tct ggc cag atg cgg cag ctg tgc att gcc atg ggc cgc tcc    1313
Leu Pro Ser Gly Gln Met Arg Gln Leu Cys Ile Ala Met Gly Arg Ser
395                     400                     405                     410

ttt gaa cct gta ggt act cgg ccc cga gtg gac tcc atg agc tct gtg    1361
Phe Glu Pro Val Gly Thr Arg Pro Arg Val Asp Ser Met Ser Ser Val
            415                     420                     425

gag gag gat gac tac gac aca ttg acc gac atc gat tcc gac aag aat    1409
Glu Glu Asp Asp Tyr Asp Thr Leu Thr Asp Ile Asp Ser Asp Lys Asn
            430                     435                     440

gtc att cgc acc aag caa tac ctc tat gtg gct gac ctg gca cgg aag    1457
Val Ile Arg Thr Lys Gln Tyr Leu Tyr Val Ala Asp Leu Ala Arg Lys
        445                     450                     455

gac aag cgt gtt ctg cgg aaa aag tac cag atc tac ttc tgg aac att    1505
Asp Lys Arg Val Leu Arg Lys Lys Tyr Gln Ile Tyr Phe Trp Asn Ile
    460                     465                     470
```

333

```
gcc acc att gct gtc ttc tat gcc ctt cct gtg gtg cag ctg gtg atc    1553
Ala Thr Ile Ala Val Phe Tyr Ala Leu Pro Val Val Gln Leu Val Ile
475                     480                 485                 490

acc tac cag acg gtg gtg aat gtc aca ggg aat cag gac atc tgc tac    1601
Thr Tyr Gln Thr Val Val Asn Val Thr Gly Asn Gln Asp Ile Cys Tyr
                    495                 500                 505

tac aac ttc ctc tgc gcc cac cca ctg ggc aat ctc agc gcc ttc aac    1649
Tyr Asn Phe Leu Cys Ala His Pro Leu Gly Asn Leu Ser Ala Phe Asn
                510                 515                 520

aac atc ctc agc aac ctg ggg tac atc ctg ctg ggg ctg ctt ttc ctg    1697
Asn Ile Leu Ser Asn Leu Gly Tyr Ile Leu Leu Gly Leu Leu Phe Leu
            525                 530                 535

ctc atc atc ctg caa cgg gag atc aac cac aac cgg gcc ctg ctg cgc    1745
Leu Ile Ile Leu Gln Arg Glu Ile Asn His Asn Arg Ala Leu Leu Arg
        540                 545                 550

aat gac ctc tgt gcc ctg gaa tgt ggg atc ccc aaa cac ttt ggg ctt    1793
Asn Asp Leu Cys Ala Leu Glu Cys Gly Ile Pro Lys His Phe Gly Leu
555                 560                 565                 570

ttc tac gcc atg ggc aca gcc ctg atg atg gag ggg ctg ctc agt gct    1841
Phe Tyr Ala Met Gly Thr Ala Leu Met Met Glu Gly Leu Leu Ser Ala
                575                 580                 585

tgc tat cat gtg tgc ccc aac tat acc aat ttc cag ttt gac aca tcg    1889
Cys Tyr His Val Cys Pro Asn Tyr Thr Asn Phe Gln Phe Asp Thr Ser
                590                 595                 600

ttc atg tac atg atc gcc gga ctc tgc atg ctg aag ctc tac cag aag    1937
Phe Met Tyr Met Ile Ala Gly Leu Cys Met Leu Lys Leu Tyr Gln Lys
                605                 610                 615

cgg cac ccg gac atc aac gcc agc gcc tac agt gcc tac gcc tgc ctg    1985
Arg His Pro Asp Ile Asn Ala Ser Ala Tyr Ser Ala Tyr Ala Cys Leu
        620                 625                 630

gcc att gtc atc ttc ttc tct gtg ctg ggc gtg gtc ttt ggc aaa ggg    2033
Ala Ile Val Ile Phe Phe Ser Val Leu Gly Val Val Phe Gly Lys Gly
635                 640                 645                 650

aac acg gcg ttc tgg atc gtc ttc tcc atc att cac atc atc gcc acc    2081
Asn Thr Ala Phe Trp Ile Val Phe Ser Ile Ile His Ile Ile Ala Thr
                655                 660                 665

ctg ctc ctc agc acg cag ctc tat tac atg ggc cgg tgg aaa ctg gac    2129
Leu Leu Leu Ser Thr Gln Leu Tyr Tyr Met Gly Arg Trp Lys Leu Asp
                670                 675                 680

tcg ggg atc ttc cgc cgc atc ctc cac gtg ctc tac aca gac tgc atc    2177
Ser Gly Ile Phe Arg Arg Ile Leu His Val Leu Tyr Thr Asp Cys Ile
        685                 690                 695
```

334

```
cgg cag tgc agc ggg ccg ctc tac gtg gac cgc atg gtg ctg ctg gtc   2225
Arg Gln Cys Ser Gly Pro Leu Tyr Val Asp Arg Met Val Leu Leu Val
    700                 705                 710

atg ggc aac gtc atc aac tgg tcg ctg gct gcc tat ggg ctt atc atg   2273
Met Gly Asn Val Ile Asn Trp Ser Leu Ala Ala Tyr Gly Leu Ile Met
715                 720                 725                 730

cgc ccc aat gat ttc gct tcc tac ttg ttg gcc att ggc atc tgc aac   2321
Arg Pro Asn Asp Phe Ala Ser Tyr Leu Leu Ala Ile Gly Ile Cys Asn
                735                 740                 745

ctg ctc ctt tac ttc gcc ttc tac atc atc atg aag ctc cgg agt ggg   2369
Leu Leu Leu Tyr Phe Ala Phe Tyr Ile Ile Met Lys Leu Arg Ser Gly
                750                 755                 760

gag agg atc aag ctc atc ccc ctg ctc tgc atc gtt tgc acc tcc gtg   2417
Glu Arg Ile Lys Leu Ile Pro Leu Leu Cys Ile Val Cys Thr Ser Val
            765                 770                 775

gtc tgg ggc ttc gcg ctc ttc ttc ttc ttc cag gga ctc agc acc tgg   2465
Val Trp Gly Phe Ala Leu Phe Phe Phe Phe Gln Gly Leu Ser Thr Trp
    780                 785                 790

cag aaa acc cct gca gag tcg agg gag cac aac cgg gac tgc atc ctc   2513
Gln Lys Thr Pro Ala Glu Ser Arg Glu His Asn Arg Asp Cys Ile Leu
795                 800                 805                 810

ctc gac ttc ttt gac gac cac gac atc tgg cac ttc ctc tcc tcc atc   2561
Leu Asp Phe Phe Asp Asp His Asp Ile Trp His Phe Leu Ser Ser Ile
                815                 820                 825

gcc atg ttc ggg tcc ttc ctg gta agc ggg cct ccc ggc cga gcc ggg   2609
Ala Met Phe Gly Ser Phe Leu Val Ser Gly Pro Pro Gly Arg Ala Gly
                830                 835                 840

tgg gta cgt gaa ggt agc agc tgc ctc ctt ccc tgt ggc tgatctggcg   2658
Trp Val Arg Glu Gly Ser Ser Cys Leu Leu Pro Cys Gly
            845                 850                 855
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ggaagggatg tgctgtttcc ctctacgtgc ccagtcctag cctcgctcta ggacccaggg 2778

ctggcttcta agtttccgtc cagtcttcag gcaagttctg tgttagtcat gcacacacat 2838

acctatgaaa ccttggagtt tacaaagaat tgccccagct ctgggcaccc tggccaccct 2898

ggtccttgga tccccttcgt cccacctggt ccaccccaga tgctgaggat gggggagctc 2958

aggcggggcc tctgctttgg ggatgggaat gtgttttttct cccaaacttg ttttttatagc 3018

tctgcttgaa gggctgggag atgaggtggg tctggatctt ttctcagagc gtctccatgc 3078

tatggttgca tttccgtttt ctatgaatga atttgcattc aataaacaac cagactcagt 3138

335

<210> 166
<211> 855
<212> PRT
<213> Homo sapiens

<400> 166

Met	Phe	Ala	Leu	Gly	Leu	Pro	Phe	Leu	Val	Leu	Leu	Val	Ala	Ser	Val
1				5					10					15	

Glu	Ser	His	Leu	Gly	Val	Leu	Gly	Pro	Lys	Asn	Val	Ser	Gln	Lys	Asp
			20					25					30		

Ala	Glu	Phe	Glu	Arg	Thr	Tyr	Val	Asp	Glu	Val	Asn	Ser	Glu	Leu	Val
		35					40					45			

Asn	Ile	Tyr	Thr	Phe	Asn	His	Thr	Val	Thr	Arg	Asn	Arg	Thr	Glu	Gly
	50					55					60				

Val	Arg	Val	Ser	Val	Asn	Val	Leu	Asn	Lys	Gln	Lys	Gly	Ala	Pro	Leu
65					70					75					80

Leu	Phe	Val	Val	Arg	Gln	Lys	Glu	Ala	Val	Val	Ser	Phe	Gln	Val	Pro
				85					90					95	

Leu	Ile	Leu	Arg	Gly	Met	Phe	Gln	Arg	Lys	Tyr	Leu	Tyr	Gln	Lys	Val
			100					105					110		

Glu	Arg	Thr	Leu	Cys	Gln	Pro	Pro	Thr	Lys	Asn	Glu	Ser	Glu	Ile	Gln
		115					120					125			

Phe	Phe	Tyr	Val	Asp	Val	Ser	Thr	Leu	Ser	Pro	Val	Asn	Thr	Thr	Tyr
	130					135					140				

Gln	Leu	Arg	Val	Ser	Arg	Met	Asp	Asp	Phe	Val	Leu	Arg	Thr	Gly	Glu
145					150					155					160

Gln	Phe	Ser	Phe	Asn	Thr	Thr	Ala	Ala	Gln	Pro	Gln	Tyr	Phe	Lys	Tyr
			165					170					175		

Glu	Phe	Pro	Glu	Gly	Val	Asp	Ser	Val	Ile	Val	Lys	Val	Thr	Ser	Asn
		180					185					190			

Lys	Ala	Phe	Pro	Cys	Ser	Val	Ile	Ser	Ile	Gln	Asp	Val	Leu	Cys	Pro
		195					200					205			

Val	Tyr	Asp	Leu	Asp	Asn	Asn	Val	Ala	Phe	Ile	Gly	Met	Tyr	Gln	Thr
	210					215					220				

Met	Thr	Lys	Lys	Ala	Ala	Ile	Thr	Val	Gln	Arg	Lys	Asp	Phe	Pro	Ser
225					230					235					240

Asn	Ser	Phe	Tyr	Val	Val	Val	Val	Val	Lys	Thr	Glu	Asp	Gln	Ala	Cys
			245					250					255		

Gly	Gly	Ser	Leu	Pro	Phe	Tyr	Pro	Phe	Ala	Glu	Asp	Glu	Pro	Val	Asp
		260					265					270			

336

```
Gln Gly His Arg Gln Lys Thr Leu Ser Val Leu Val Ser Gln Ala Val
        275                 280                 285

Thr Ser Glu Ala Tyr Val Ser Gly Met Leu Phe Cys Leu Gly Ile Phe
        290                 295                 300

Leu Ser Phe Tyr Leu Leu Thr Val Leu Leu Ala Cys Trp Glu Asn Trp
305                 310                 315                 320

Arg Gln Lys Lys Lys Thr Leu Leu Val Ala Ile Asp Arg Ala Cys Pro
                325                 330                 335

Glu Ser Gly His Pro Arg Val Leu Ala Asp Ser Phe Pro Gly Ser Ser
                340                 345                 350

Pro Tyr Glu Gly Tyr Asn Tyr Gly Ser Phe Glu Asn Val Ser Gly Ser
        355                 360                 365

Thr Asp Gly Leu Val Asp Ser Ala Gly Thr Gly Asp Leu Ser Tyr Gly
    370                 375                 380

Tyr Gln Gly His Asp Gln Phe Lys Arg Arg Leu Pro Ser Gly Gln Met
385                 390                 395                 400

Arg Gln Leu Cys Ile Ala Met Gly Arg Ser Phe Glu Pro Val Gly Thr
                405                 410                 415

Arg Pro Arg Val Asp Ser Met Ser Ser Val Glu Glu Asp Asp Tyr Asp
                420                 425                 430

Thr Leu Thr Asp Ile Asp Ser Asp Lys Asn Val Ile Arg Thr Lys Gln
        435                 440                 445

Tyr Leu Tyr Val Ala Asp Leu Ala Arg Lys Asp Lys Arg Val Leu Arg
        450                 455                 460

Lys Lys Tyr Gln Ile Tyr Phe Trp Asn Ile Ala Thr Ile Ala Val Phe
465                 470                 475                 480

Tyr Ala Leu Pro Val Val Gln Leu Val Ile Thr Tyr Gln Thr Val Val
                485                 490                 495

Asn Val Thr Gly Asn Gln Asp Ile Cys Tyr Tyr Asn Phe Leu Cys Ala
                500                 505                 510

His Pro Leu Gly Asn Leu Ser Ala Phe Asn Asn Ile Leu Ser Asn Leu
                515                 520                 525

Gly Tyr Ile Leu Leu Gly Leu Leu Phe Leu Leu Ile Ile Leu Gln Arg
        530                 535                 540

Glu Ile Asn His Asn Arg Ala Leu Leu Arg Asn Asp Leu Cys Ala Leu
545                 550                 555                 560

Glu Cys Gly Ile Pro Lys His Phe Gly Leu Phe Tyr Ala Met Gly Thr
                565                 570                 575
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337

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Ala Leu Met Met Glu Gly Leu Leu Ser Ala Cys Tyr His Val Cys Pro
            580                 585             590

Asn Tyr Thr Asn Phe Gln Phe Asp Thr Ser Phe Met Tyr Met Ile Ala
        595                 600             605

Gly Leu Cys Met Leu Lys Leu Tyr Gln Lys Arg His Pro Asp Ile Asn
    610                 615             620

Ala Ser Ala Tyr Ser Ala Tyr Ala Cys Leu Ala Ile Val Ile Phe Phe
625                 630             635                 640

Ser Val Leu Gly Val Val Phe Gly Lys Gly Asn Thr Ala Phe Trp Ile
            645                 650             655

Val Phe Ser Ile Ile His Ile Ile Ala Thr Leu Leu Leu Ser Thr Gln
            660             665                 670

Leu Tyr Tyr Met Gly Arg Trp Lys Leu Asp Ser Gly Ile Phe Arg Arg
        675             680             685

Ile Leu His Val Leu Tyr Thr Asp Cys Ile Arg Gln Cys Ser Gly Pro
    690             695             700

Leu Tyr Val Asp Arg Met Val Leu Leu Val Met Gly Asn Val Ile Asn
705             710             715                 720

Trp Ser Leu Ala Ala Tyr Gly Leu Ile Met Arg Pro Asn Asp Phe Ala
            725             730             735

Ser Tyr Leu Leu Ala Ile Gly Ile Cys Asn Leu Leu Leu Tyr Phe Ala
        740             745             750

Phe Tyr Ile Ile Met Lys Leu Arg Ser Gly Glu Arg Ile Lys Leu Ile
        755             760             765

Pro Leu Leu Cys Ile Val Cys Thr Ser Val Val Trp Gly Phe Ala Leu
    770             775             780

Phe Phe Phe Phe Gln Gly Leu Ser Thr Trp Gln Lys Thr Pro Ala Glu
785             790             795                 800

Ser Arg Glu His Asn Arg Asp Cys Ile Leu Leu Asp Phe Phe Asp Asp
            805             810             815

His Asp Ile Trp His Phe Leu Ser Ser Ile Ala Met Phe Gly Ser Phe
            820             825             830

Leu Val Ser Gly Pro Pro Gly Arg Ala Gly Trp Val Arg Glu Gly Ser
        835             840             845

Ser Cys Leu Leu Pro Cys Gly
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<210> 167

338

<211> 2815
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (56)..(571)

<400> 167
gcgaagcgcg cctgcgaccc ggcgtccggg cgcgctggag aggacgcgag gagcc atg 58
                                                            Met
                                                            1

agg cgc cag cct gcg aag gtg gcg gcg ctg ctg ctc ggg ctg ctc ttg 106
Arg Arg Gln Pro Ala Lys Val Ala Ala Leu Leu Leu Gly Leu Leu Leu
                5   10   15

gag tgc aca gaa gcc aaa aag cat tgc tgg tat ttc gaa gga ctc tat 154
Glu Cys Thr Glu Ala Lys Lys His Cys Trp Tyr Phe Glu Gly Leu Tyr
            20   25   30

cca acc tat tat ata tgc cgc tcc tac gag gac tgc tgt ggc tcc agg 202
Pro Thr Tyr Tyr Ile Cys Arg Ser Tyr Glu Asp Cys Cys Gly Ser Arg
        35   40   45

tgc tgt gtg cgg gcc ctc tcc ata cag agg ctg tgg tac ttc tgg ttc 250
Cys Cys Val Arg Ala Leu Ser Ile Gln Arg Leu Trp Tyr Phe Trp Phe
 50   55   60   65

ctt ctg atg atg ggc gtg ctt ttc tgc tgc gga gcc ggc ttc ttc atc 298
Leu Leu Met Met Gly Val Leu Phe Cys Cys Gly Ala Gly Phe Phe Ile
                70   75   80

cgg agg cgc atg tac ccc ccg ccg ctg atc gag gag cca gcc ttc aat 346
Arg Arg Arg Met Tyr Pro Pro Pro Leu Ile Glu Glu Pro Ala Phe Asn
                85   90   95

gtg tcc tac acc agg cag ccc cca aat ccc ggc cca gga gcc cag cag 394
Val Ser Tyr Thr Arg Gln Pro Pro Asn Pro Gly Pro Gly Ala Gln Gln
            100   105   110

ccg ggg ccg ccc tat tac acc gac cca gga gga ccg ggg atg aac cct 442
Pro Gly Pro Pro Tyr Tyr Thr Asp Pro Gly Gly Pro Gly Met Asn Pro
     115   120   125

gtc ggg aat tcc atg gca atg gct ttc cag gtc cca ccc aac tca ccc 490
Val Gly Asn Ser Met Ala Met Ala Phe Gln Val Pro Pro Asn Ser Pro
130   135   140   145

cag ggg agt gtg gcc tgc ccg ccc cct cca gcc tac tgc aac acg cct 538
Gln Gly Ser Val Ala Cys Pro Pro Pro Pro Ala Tyr Cys Asn Thr Pro
                150   155   160

ccg ccc ccg tac gaa cag gta gtg aag gcc aag tagtggggtg cccacgtgca 591
Pro Pro Pro Tyr Glu Gln Val Val Lys Ala Lys
                165   170

339

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agaggaggga caggagaggg cctttccctg gcctttctgt cttcgttgat gttcacttcc 651

aggaacggtc tcgtgggctg ctaagggcag ttcctctgat atcctcacag caagcacagc 711

tctctttcag gctttccatg gagtacaata tatgaactca cactttgtct cctctgttgc 771

ttctgtttct gacgcagtct gtgctctcac atggtagtgt ggtgacagtc cccgagggct 831

gacgtcctta cggtggcgtg accagatcta cgggagagag actgagagga agaaggcagt 891

gctggaggtg caggtggcat gtagaggggc caggccgagc atcccaggca agcatccttc 951

tgcccgggta ttaataggaa gccccatgcc gggcggctca gccgatgaag cagcagccga 1011

ctgagctgag cccagcaggt catctgctcc agcctgtcct ctcgtcagcc ttcctcttcc 1071

agaagctgtt ggagagacat tcaggagaga gcaagcccct tgtcatgttt ctgtctctgt 1131

tcatatccta aagatagact tctcctgcac cgccagggaa gggtagcacg tgcagctctc 1191

accgcaggat ggggcctaga atcaggcttg ccttggaggc ctgacagtga tctgacatcc 1251

actaagcaaa tttatttaaa ttcatgggaa atcacttcct gccccaaact gagacattgc 1311

attttgtgag ctcttggtct gatttggaga aaggactgtt acccattttt ttggtgtgtt 1371

tatggaagtg catgtagagc gtcctgccct ttgaaatcag actgggtgtg tgtcttccct 1431

ggacatcact gcctctccag ggcattctca ggcccggggg tctccttccc tcaggcagct 1491

ccagtggtgg gttctgaagg gtgctttcaa aacggggcac atctggctgg gaagtcacat 1551

ggactcttcc agggagagag accagctgag gcgtctctct ctgaggttgt gttgggtcta 1611

agcgggtgtg tgctgggctc caaggaggag gagcttgctg gggaaagaca ggagaagtac 1671

tgactcaact gcactgacca tgttgtcata attagaataa agaagaagtg gtcggaaatg 1731

cacattcctg gataggaatc acagctcacc ccaggatctc acaggtagtc tcctgagtag 1791

ttgacggcta gcggggagct agttccgccg catagttata gtgttgatgt gtgaacgctg 1851

acctgtcctg tgtgctaaga gctatgcagc ttagctgagg cgcctagatt actagatgtg 1911

ctgtatcacg gggaatgagg tgggggtgct tattttttaa tgaactaatc agagcctctt 1971

gagaaattgt tactcattga actggagcat caagacatct catggaagtg gatacggagt 2031

gatttggtgt ccatgctttt cactctgagg acatttaatc ggagaacctc ctggggaatt 2091

ttgtgggaga cacttgggaa caaaacagac accctgggaa tgcagttgca agcacagatg 2151

ctgccaccag tgtctctgac caccctggtg tgactgctga ctgccagcgt ggtacctccc 2211

atgctgcagg cctccatcta aatgagacaa caaagcacaa tgttcactgt ttacaaccaa 2271

gacaactgcg tgggtccaaa cactcctctt cctccaggtc atttgtttttg catttttaat 2331
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340

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gtctttattt tttgtaatga aaaagcacac taagctgccc ctggaatcgg gtgcagctga 2391

ataggcaccc aaaagtccgt gactaaattt cgtttgtctt tttgatagca aattatgtta 2451

agagacagtg atggctaggg ctcaacaatt ttgtattccc atgtttgtgt gagacagagt 2511

ttgtttttccc ttgaacttgg ttagaattgt gctactgtga acgctgatcc tgcatatgga 2571

agttccgctt cggtgacatt tcctggccat tcttgtttcc attgtgtgga tggtgggttg 2631

tgcccacttc ctggagtgag acagctcctg gtgtgtagaa ttcccggagc gtccgtggtt 2691

cagagtaaac ttgaagcaga tctgtgcatg cttttcctct gcaacaattg gctcgtttct 2751

cttttttgtt ctcttttgat aggatcctgt ttcctatgtg tgcaaaataa aaataaattt 2811

gggc                                                              2815
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<210> 168
<211> 172
<212> PRT
<213> Homo sapiens

<400> 168

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Met Arg Arg Gln Pro Ala Lys Val Ala Ala Leu Leu Leu Gly Leu Leu
 1               5                  10                  15

Leu Glu Cys Thr Glu Ala Lys Lys His Cys Trp Tyr Phe Glu Gly Leu
            20                  25                  30

Tyr Pro Thr Tyr Tyr Ile Cys Arg Ser Tyr Glu Asp Cys Cys Gly Ser
            35                  40                  45

Arg Cys Cys Val Arg Ala Leu Ser Ile Gln Arg Leu Trp Tyr Phe Trp
    50                  55                  60

Phe Leu Leu Met Met Gly Val Leu Phe Cys Cys Gly Ala Gly Phe Phe
65                  70                  75                  80

Ile Arg Arg Arg Met Tyr Pro Pro Pro Leu Ile Glu Glu Pro Ala Phe
                85                  90                  95

Asn Val Ser Tyr Thr Arg Gln Pro Pro Asn Pro Gly Pro Gly Ala Gln
            100                 105                 110

Gln Pro Gly Pro Pro Tyr Tyr Thr Asp Pro Gly Gly Pro Gly Met Asn
            115                 120                 125

Pro Val Gly Asn Ser Met Ala Met Ala Phe Gln Val Pro Pro Asn Ser
            130                 135                 140

Pro Gln Gly Ser Val Ala Cys Pro Pro Pro Ala Tyr Cys Asn Thr
145                 150                 155                 160

Pro Pro Pro Pro Tyr Glu Gln Val Val Lys Ala Lys
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341

165   170

<210> 169
<211> 3337
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (136)..(1755)

<400> 169
tctcgctgcg ggaagggtcc tgggccccgg gcggcggtcg ccaggtctca gggccggggg 60

tacccgagtc tcgtttcctc tcagtccatc caccctt cat ggggccagag ccctctctcc 120

agaatctgag cagca atg ccg ttt gct gaa gac aag acc tat aag tat atc 171
            Met Pro Phe Ala Glu Asp Lys Thr Tyr Lys Tyr Ile
            1   5   10

tgc cgc aat ttc agc aat ttt tgc aat gtg gat gtt gta gag att ctg 219
Cys Arg Asn Phe Ser Asn Phe Cys Asn Val Asp Val Val Glu Ile Leu
        15   20   25

cct tac ctg ccc tgc ctc aca gca aga gac cag gat cga ctg cgg gcc 267
Pro Tyr Leu Pro Cys Leu Thr Ala Arg Asp Gln Asp Arg Leu Arg Ala
    30   35   40

acc tgc aca ctc tca ggg aac cgg gac acc ctc tgg cat ctc ttc aat 315
Thr Cys Thr Leu Ser Gly Asn Arg Asp Thr Leu Trp His Leu Phe Asn
45   50   55   60

acc ctt cag cgg cgg ccc ggc tgg gtg gag tac ttc att gcg gca ctg 363
Thr Leu Gln Arg Arg Pro Gly Trp Val Glu Tyr Phe Ile Ala Ala Leu
            65   70   75

agg ggc tgt gag cta gtt gat ctc gcg gac gaa gtg gcc tct gtc tac 411
Arg Gly Cys Glu Leu Val Asp Leu Ala Asp Glu Val Ala Ser Val Tyr
            80   85   90

cag agc tac cag cct cgg acc tcg gac cgt ccc cca gac cca ctg gag 459
Gln Ser Tyr Gln Pro Arg Thr Ser Asp Arg Pro Pro Asp Pro Leu Glu
            95   100   105

cca ccg tca ctt cct gct gag agg cca ggg ccc ccc aca cct gct gcg 507
Pro Pro Ser Leu Pro Ala Glu Arg Pro Gly Pro Pro Thr Pro Ala Ala
    110   115   120

gcc cac agc atc ccc tac aac agc tgc aga gag aag gag cca agt tac 555
Ala His Ser Ile Pro Tyr Asn Ser Cys Arg Glu Lys Glu Pro Ser Tyr
125   130   135   140

ccc atg cct gtc cag gag acc cag gcg cca gag tcc cca gga gag aat 603
Pro Met Pro Val Gln Glu Thr Gln Ala Pro Glu Ser Pro Gly Glu Asn
            145   150   155

342

```
tca gag caa gcc ctg cag acg ctc agc ccc aga gcc atc cca agg aat    651
Ser Glu Gln Ala Leu Gln Thr Leu Ser Pro Arg Ala Ile Pro Arg Asn
            160             165             170

cca gat ggt ggc ccc ctg gag tcc tcc tct gac ctg gca gcc ctc agc    699
Pro Asp Gly Gly Pro Leu Glu Ser Ser Ser Asp Leu Ala Ala Leu Ser
            175             180             185

cct ctg acc tcc agc ggg cat cag gag cag gac aca gaa ctg ggc agt    747
Pro Leu Thr Ser Ser Gly His Gln Glu Gln Asp Thr Glu Leu Gly Ser
            190             195             200

acc cac aca gca ggt gcg acc tcc agc ctc aca cca tcc cgt ggg cct    795
Thr His Thr Ala Gly Ala Thr Ser Ser Leu Thr Pro Ser Arg Gly Pro
205             210             215             220

gtg tct cca tct gtc tcc ttc cag ccc ctg gcc cgt tcc acc ccc agg    843
Val Ser Pro Ser Val Ser Phe Gln Pro Leu Ala Arg Ser Thr Pro Arg
            225             230             235

gca agc cgc ttg cct gga ccc aca ggg tca gtt gta tct act ggc acc    891
Ala Ser Arg Leu Pro Gly Pro Thr Gly Ser Val Val Ser Thr Gly Thr
            240             245             250

tcc ttc tcc tcc tca tcc cct ggc ttg gcc tct gca ggg gct gca gag    939
Ser Phe Ser Ser Ser Ser Pro Gly Leu Ala Ser Ala Gly Ala Ala Glu
            255             260             265

ggt aaa cag ggt gca gag agt gac cag gcc gag cct atc atc tgc tcc    987
Gly Lys Gln Gly Ala Glu Ser Asp Gln Ala Glu Pro Ile Ile Cys Ser
            270             275             280

agt ggg gca gag gca cct gcc aac tct ctg ccc tcc aaa gtg cct acc   1035
Ser Gly Ala Glu Ala Pro Ala Asn Ser Leu Pro Ser Lys Val Pro Thr
285             290             295             300

acc ttg atg cct gtg aac aca gtg gcc ctg aaa gtg cct gcc aac cca   1083
Thr Leu Met Pro Val Asn Thr Val Ala Leu Lys Val Pro Ala Asn Pro
            305             310             315

gca tct gtc agc aca gtg ccc tcc aag ttg cca act agc tca aag ccc   1131
Ala Ser Val Ser Thr Val Pro Ser Lys Leu Pro Thr Ser Ser Lys Pro
            320             325             330

cct ggt gca gtg cct tct aat gcg ctc acc aat cca gca cca tcc aaa   1179
Pro Gly Ala Val Pro Ser Asn Ala Leu Thr Asn Pro Ala Pro Ser Lys
            335             340             345

ttg ccc atc aac tca acc cgt gct ggc atg gtg cca tcc aaa gtg cct   1227
Leu Pro Ile Asn Ser Thr Arg Ala Gly Met Val Pro Ser Lys Val Pro
            350             355             360

act agc atg gtg ctc acc aag gtg tct gcc agc aca gtc ccc act gac   1275
Thr Ser Met Val Leu Thr Lys Val Ser Ala Ser Thr Val Pro Thr Asp
365             370             375             380
```

343

```
ggg agc agc aga aat gag gag acc cca gca gct cca aca ccc gcc ggc   1323
Gly Ser Ser Arg Asn Glu Glu Thr Pro Ala Ala Pro Thr Pro Ala Gly
            385             390             395

gcc act gga ggc agc tca gcc tgg cta gac agc agc tct gag aat agg   1371
Ala Thr Gly Gly Ser Ser Ala Trp Leu Asp Ser Ser Ser Glu Asn Arg
        400             405             410

ggc ctt ggg tcg gag ctg agt aag cct ggc gtg ctg gca tcc cag gta   1419
Gly Leu Gly Ser Glu Leu Ser Lys Pro Gly Val Leu Ala Ser Gln Val
        415             420             425

gac agc ccg ttc tcg ggc tgc ttc gag gat ctt gcc atc agt gcc agc   1467
Asp Ser Pro Phe Ser Gly Cys Phe Glu Asp Leu Ala Ile Ser Ala Ser
    430             435             440

acc tcc ttg ggc atg ggg ccc tgc cat ggc cca gag gag aat gag tat   1515
Thr Ser Leu Gly Met Gly Pro Cys His Gly Pro Glu Glu Asn Glu Tyr
445             450             455             460

aag tcc gag ggc acc ttt ggg atc cac gtg gct gag aac ccc agc atc   1563
Lys Ser Glu Gly Thr Phe Gly Ile His Val Ala Glu Asn Pro Ser Ile
            465             470             475

cag ctc ctg gag ggc aac cct ggg cca cct gcg gac ccg gat ggc ggc   1611
Gln Leu Leu Glu Gly Asn Pro Gly Pro Pro Ala Asp Pro Asp Gly Gly
            480             485             490

ccc agg cca caa gcc gac cgg aag ttc cag gag agg gag gtg cca tgc   1659
Pro Arg Pro Gln Ala Asp Arg Lys Phe Gln Glu Arg Glu Val Pro Cys
        495             500             505

cac agg ccc tca cct ggg gct ctg tgg ctc cag gtg gct gtg aca ggg   1707
His Arg Pro Ser Pro Gly Ala Leu Trp Leu Gln Val Ala Val Thr Gly
        510             515             520

gtg ctg gta gtc aca ctc ctg gtg gtg ctg tac cgg cgg cgt ctg cac   1755
Val Leu Val Val Thr Leu Leu Val Val Leu Tyr Arg Arg Arg Leu His
525             530             535             540

tagtgaagcc ctgggctctt cccaccaccc atctgttccg ttcctgcagt atacctggcc 1815

cctctccgaa gcccctcttt ccctcccctc tggtctccat tctcttcagc tccctacatg 1875

ggctggggag gagacacctg gtgggcagag ctcaggcaga ggtttggatt tcagctccct 1935

cacttccggg gctgtgtggc tttggcagat gtcagacttc tggtcttgct tctccacgtg 1995

gacagtgagt atctggctca ttcttcactg ggttcttctg agattgaacc tacaggtgtt 2055

tgccaagtgc ctggcccaga gcaagtggcc actgcttctc ccatctctct cctgcccaac 2115

ctggtagagc tgagggcatg agaggcagag tgcacagtgg tcaagggtgc agctctgcgg 2175

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gggatttatc tgtctgtccc ttagttttct cacctgtaaa aggaggataa gtatatatat 2295
```

344

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atatttccca gtgttgtgaa gattaaagga gtttatcgat gtaggtctta ggatgagtcc 2355

tggcatttac caagggttgg atatatgtta ttatcactat taagtgttga gggtccaggc 2415

atgctgggca acagggaccc catctctaca aaaaagttta aaaaattagc caggcgtggt 2475

ggtgcacctg tcgtcttagc tacttgggag gctgaggtgg gaggatcgct tgagcccgga 2535

agcttgaagc tgcagtgagc taggatcgtg ccactgcact ccaacctggg tgagagagcg 2595

agaccctgtc tcaagaaaaa gaaaaatgca gagaaacagg agtcttggct actcctttag 2655

aggcagactc agaccctcct gcctcacagc tttatctttg tatttgcccc ttactttatc 2715

ttgtgccttg agaaattgct ggggagagag gtatgtccac tgggcagctg tacaggatgg 2775

aggatatagg gcgtttccac tcccagcagc caggttccct caccccaagc tcacccactg 2835

ttggggagat tatctacaat aacaccagaa acacattggg gtggattggg ggtatcctta 2895

tgggttcttt tcagggaacc attgctggac aaggcacagg agccacctcc atttctgagc 2955

tctgcaaggg acaagaacta gagccatcag gggctgggct cactgtggcc ccaccccaag 3015

ccgtcagcct ccaggatct acaccctgcc ttggctgcta cagcttttc actccactgc 3075

cctaggggag ttcagcaacc taatgatctc tatctctgaa catctcttca tcccatgctc 3135

caagtccagc aacctgcacc ctggaaccag gagtggaccc tacccgggct gtctgtatta 3195

atccccatcc cccaccacca atcttaaaaa gccctctgtc cccctaccct aaaccccagt 3255

taggtaccca tgctgggcag gtcagttaac aatttatgca caggtactag ttttattgta 3315

ttaccgttcc agggtagctt tg                                        3337
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<210> 170
<211> 540
<212> PRT
<213> Homo sapiens

<400> 170

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Met Pro Phe Ala Glu Asp Lys Thr Tyr Lys Tyr Ile Cys Arg Asn Phe
 1               5                  10                  15

Ser Asn Phe Cys Asn Val Asp Val Val Glu Ile Leu Pro Tyr Leu Pro
             20                  25                  30

Cys Leu Thr Ala Arg Asp Gln Asp Arg Leu Arg Ala Thr Cys Thr Leu
         35                  40                  45

Ser Gly Asn Arg Asp Thr Leu Trp His Leu Phe Asn Thr Leu Gln Arg
     50                  55                  60

Arg Pro Gly Trp Val Glu Tyr Phe Ile Ala Ala Leu Arg Gly Cys Glu
```

345

```
        65                    70                    75                    80
Leu Val Asp Leu Ala Asp Glu Val Ala Ser Val Tyr Gln Ser Tyr Gln
                85                    90                    95

Pro Arg Thr Ser Asp Arg Pro Pro Asp Pro Leu Glu Pro Pro Ser Leu
                100                   105                   110

Pro Ala Glu Arg Pro Gly Pro Pro Thr Pro Ala Ala Ala His Ser Ile
                115                   120                   125

Pro Tyr Asn Ser Cys Arg Glu Lys Glu Pro Ser Tyr Pro Met Pro Val
    130                   135                   140

Gln Glu Thr Gln Ala Pro Glu Ser Pro Gly Glu Asn Ser Glu Gln Ala
145                   150                   155                   160

Leu Gln Thr Leu Ser Pro Arg Ala Ile Pro Arg Asn Pro Asp Gly Gly
                165                   170                   175

Pro Leu Glu Ser Ser Ser Asp Leu Ala Ala Leu Ser Pro Leu Thr Ser
                180                   185                   190

Ser Gly His Gln Glu Gln Asp Thr Glu Leu Gly Ser Thr His Thr Ala
                195                   200                   205

Gly Ala Thr Ser Ser Leu Thr Pro Ser Arg Gly Pro Val Ser Pro Ser
    210                   215                   220

Val Ser Phe Gln Pro Leu Ala Arg Ser Thr Pro Arg Ala Ser Arg Leu
225                   230                   235                   240

Pro Gly Pro Thr Gly Ser Val Val Ser Thr Gly Thr Ser Phe Ser Ser
                245                   250                   255

Ser Ser Pro Gly Leu Ala Ser Ala Gly Ala Ala Glu Gly Lys Gln Gly
            260                   265                   270

Ala Glu Ser Asp Gln Ala Glu Pro Ile Ile Cys Ser Ser Gly Ala Glu
    275                   280                   285

Ala Pro Ala Asn Ser Leu Pro Ser Lys Val Pro Thr Thr Leu Met Pro
    290                   295                   300

Val Asn Thr Val Ala Leu Lys Val Pro Ala Asn Pro Ala Ser Val Ser
305                   310                   315                   320

Thr Val Pro Ser Lys Leu Pro Thr Ser Ser Lys Pro Pro Gly Ala Val
                325                   330                   335

Pro Ser Asn Ala Leu Thr Asn Pro Ala Pro Ser Lys Leu Pro Ile Asn
                340                   345                   350

Ser Thr Arg Ala Gly Met Val Pro Ser Lys Val Pro Thr Ser Met Val
                355                   360                   365

Leu Thr Lys Val Ser Ala Ser Thr Val Pro Thr Asp Gly Ser Ser Arg
```

346

```
     370                 375                 380
Asn Glu Glu Thr Pro Ala Ala Pro Thr Pro Ala Gly Ala Thr Gly Gly
385                 390                 395                 400

Ser Ser Ala Trp Leu Asp Ser Ser Ser Glu Asn Arg Gly Leu Gly Ser
                405                 410                 415

Glu Leu Ser Lys Pro Gly Val Leu Ala Ser Gln Val Asp Ser Pro Phe
                420                 425                 430

Ser Gly Cys Phe Glu Asp Leu Ala Ile Ser Ala Ser Thr Ser Leu Gly
            435                 440                 445

Met Gly Pro Cys His Gly Pro Glu Glu Asn Glu Tyr Lys Ser Glu Gly
        450                 455                 460

Thr Phe Gly Ile His Val Ala Glu Asn Pro Ser Ile Gln Leu Leu Glu
465                 470                 475                 480

Gly Asn Pro Gly Pro Pro Ala Asp Pro Asp Gly Gly Pro Arg Pro Gln
                485                 490                 495

Ala Asp Arg Lys Phe Gln Glu Arg Glu Val Pro Cys His Arg Pro Ser
            500                 505                 510

Pro Gly Ala Leu Trp Leu Gln Val Ala Val Thr Gly Val Leu Val Val
        515                 520                 525

Thr Leu Leu Val Val Leu Tyr Arg Arg Arg Leu His
    530                 535                 540
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<210> 171
<211> 3579
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (242)..(3094)

<400> 171

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gaggcccgag gcggaagtgg gacggccaag cagggaagcg agggctcggg atcgacggcc 120

gcggggcgcc gacgaggagt gcaggactca ggaagggcga gtgcgcggcg acagagcccg 180

gggaaggagg cagggcaagg ccgggcttgg gggcaggtgg tccgggcatc cagccttgaa 240

g atg cac aag agg aaa gga ccc ccg gga ccc ccg ggc aga ggc gcc gcg 289
  Met His Lys Arg Lys Gly Pro Pro Gly Pro Pro Gly Arg Gly Ala Ala
   1               5                   10                  15

gcc gcc cgc cag ctg ggc ctg ctg gtt gac ctc tcc cca gat ggc ctg   337
```

347

```
Ala Ala Arg Gln Leu Gly Leu Leu Val Asp Leu Ser Pro Asp Gly Leu
            20                      25                  30

atg atc cct gag gac ggg gct aac gat gaa gaa ctg gag gct gag ttc    385
Met Ile Pro Glu Asp Gly Ala Asn Asp Glu Glu Leu Glu Ala Glu Phe
            35                      40                  45

ttg gct ttg gtc ggg ggc cag ccc cca gcc ctg gag aag ctc aaa ggc    433
Leu Ala Leu Val Gly Gly Gln Pro Pro Ala Leu Glu Lys Leu Lys Gly
    50                      55                  60

aaa ggt ccc ttg ccg atg gag gcc att gag aag atg gcc agc ctg tgc    481
Lys Gly Pro Leu Pro Met Glu Ala Ile Glu Lys Met Ala Ser Leu Cys
65                      70                  75                  80

atg aga gac ccg gat gag gat gag gag gag ggg acg gat gag gac gac    529
Met Arg Asp Pro Asp Glu Asp Glu Glu Glu Gly Thr Asp Glu Asp Asp
                85                      90                  95

ttg gag gct gat gat gac ctg ctg gcg gag cta aat gag gtc ctt gga    577
Leu Glu Ala Asp Asp Asp Leu Leu Ala Glu Leu Asn Glu Val Leu Gly
                100                     105                 110

gag gag cag aag gct tca gag acc cca cct cct gtg gcc cag ccg aag    625
Glu Glu Gln Lys Ala Ser Glu Thr Pro Pro Pro Val Ala Gln Pro Lys
            115                     120                 125

cct gag gcc cct cat ccg ggg ctg gag acc acc ttg cag gag agg ctg    673
Pro Glu Ala Pro His Pro Gly Leu Glu Thr Thr Leu Gln Glu Arg Leu
    130                     135                 140

gcg ctc tat cag aca gca att gaa agc gcc aga caa gct gga gac agc    721
Ala Leu Tyr Gln Thr Ala Ile Glu Ser Ala Arg Gln Ala Gly Asp Ser
145                     150                 155                 160

gcc aag atg cgg cgc tac gat cgg ggg ctt aaa aca ctg gaa aac ctg    769
Ala Lys Met Arg Arg Tyr Asp Arg Gly Leu Lys Thr Leu Glu Asn Leu
                165                     170                 175

ctc gcc tcc atc cgt aag ggc aat gcc att gac gaa gcg gac atc ccg    817
Leu Ala Ser Ile Arg Lys Gly Asn Ala Ile Asp Glu Ala Asp Ile Pro
                180                     185                 190

ccg cca gtg gcc ata gga aaa ggc ccg gcg tcc acg cct acc tac agc    865
Pro Pro Val Ala Ile Gly Lys Gly Pro Ala Ser Thr Pro Thr Tyr Ser
                195                     200                 205

cct gca ccc acc cag ccg gcc cct aga atc gcg tca gcc cca gag ccc    913
Pro Ala Pro Thr Gln Pro Ala Pro Arg Ile Ala Ser Ala Pro Glu Pro
    210                     215                 220

agg gtc acc ctg gag gga cct tct gcc acc gcc cca gcc tca tct cca    961
Arg Val Thr Leu Glu Gly Pro Ser Ala Thr Ala Pro Ala Ser Ser Pro
225                     230                 235                 240

ggc ttg gct aag ccc cag atg ccc cca ggt ccc tgc agc cct ggc cct   1009
Gly Leu Ala Lys Pro Gln Met Pro Pro Gly Pro Cys Ser Pro Gly Pro
```

348

```
                     245                      250                      255

ctg gcc cag ttg cag agc cgc cag cgc gac tac aag ctg gct gcc ctc        1057
Leu Ala Gln Leu Gln Ser Arg Gln Arg Asp Tyr Lys Leu Ala Ala Leu
            260                      265                      270

cac gcc aag cag cag gga gat acc act gct gcc gct aga cac ttc cgc        1105
His Ala Lys Gln Gln Gly Asp Thr Thr Ala Ala Ala Arg His Phe Arg
            275                      280                      285

gtg gct aag agc ttt gat gct gtc ttg gag gcc ctg agc cgg ggt gag        1153
Val Ala Lys Ser Phe Asp Ala Val Leu Glu Ala Leu Ser Arg Gly Glu
            290                      295                      300

ccc gtg gac ctc tcc tgc ctg ccc cct cca ccc gac cag ctg ccc cca        1201
Pro Val Asp Leu Ser Cys Leu Pro Pro Pro Pro Asp Gln Leu Pro Pro
305                      310                      315                      320

gac cca ccg tca cca ccg tcg cag cct ccg acc ccc gct acg gcg ccc        1249
Asp Pro Pro Ser Pro Pro Ser Gln Pro Pro Thr Pro Ala Thr Ala Pro
                    325                      330                      335

tcc aca aca gag gtg ccc cca ccc ccg agg acc ctg ctg gag gcg ctg        1297
Ser Thr Thr Glu Val Pro Pro Pro Pro Arg Thr Leu Leu Glu Ala Leu
            340                      345                      350

gag cag cgg atg gag cgg tac cag gtg gcc gca gcc cag gcc aag agc        1345
Glu Gln Arg Met Glu Arg Tyr Gln Val Ala Ala Ala Gln Ala Lys Ser
            355                      360                      365

aag ggg gac cag cgg aaa gct cga atg cac gag cgc atc gtc aag caa        1393
Lys Gly Asp Gln Arg Lys Ala Arg Met His Glu Arg Ile Val Lys Gln
            370                      375                      380

tac caa gat gcc atc cga gcc cac aag gct ggc cga gcc gtg gat gtc        1441
Tyr Gln Asp Ala Ile Arg Ala His Lys Ala Gly Arg Ala Val Asp Val
385                      390                      395                      400

gct gaa ttg ccc gtg ccc cca ggc ttc ccc cca atc cag ggc ctg gag        1489
Ala Glu Leu Pro Val Pro Pro Gly Phe Pro Pro Ile Gln Gly Leu Glu
                    405                      410                      415

gcc acc aag ccc acc cag cag agt ctg gtg ggt gtc ctg gag act gcc        1537
Ala Thr Lys Pro Thr Gln Gln Ser Leu Val Gly Val Leu Glu Thr Ala
            420                      425                      430

atg aag ctg gcc aac cag gat gaa ggc cca gag gat gaa gag gat gag        1585
Met Lys Leu Ala Asn Gln Asp Glu Gly Pro Glu Asp Glu Glu Asp Glu
            435                      440                      445

gtg cct aag aag cag aac agc cct gtg gcc ccc aca gcc cag ccc aaa        1633
Val Pro Lys Lys Gln Asn Ser Pro Val Ala Pro Thr Ala Gln Pro Lys
            450                      455                      460

gcc cca ccc tca aga act ccc cag tcg gga tca gcc cca aca gcc aaa        1681
Ala Pro Pro Ser Arg Thr Pro Gln Ser Gly Ser Ala Pro Thr Ala Lys
465                      470                      475                      480
```

349

```
gcg ccc ccc aaa gcc aca tcc acc aga gcc cag cag cag ctg gcc ttc    1729
Ala Pro Pro Lys Ala Thr Ser Thr Arg Ala Gln Gln Gln Leu Ala Phe
            485                 490                 495

cta gag ggc cgc aag aag cag ctc ctg cag gcc gca ctg cga gcc aag    1777
Leu Glu Gly Arg Lys Lys Gln Leu Leu Gln Ala Ala Leu Arg Ala Lys
            500                 505                 510

cag aaa aac gac gtg gag ggt gcc aag atg cac ctg cgc caa gcc aag    1825
Gln Lys Asn Asp Val Glu Gly Ala Lys Met His Leu Arg Gln Ala Lys
            515                 520                 525

gga ctg gag cct atg ctg gag gcc tcg cgc aat ggg ctg cct gtg gac    1873
Gly Leu Glu Pro Met Leu Glu Ala Ser Arg Asn Gly Leu Pro Val Asp
        530                 535                 540

atc acc aag gtg ccg cct gcc cct gtc aac aag gac gac ttt gcc ctg    1921
Ile Thr Lys Val Pro Pro Ala Pro Val Asn Lys Asp Asp Phe Ala Leu
545                 550                 555                 560

gtc cag cgg cct ggc ccg ggt ctg tct cag gag gcc gcc cgg cgc tat    1969
Val Gln Arg Pro Gly Pro Gly Leu Ser Gln Glu Ala Ala Arg Arg Tyr
                565                 570                 575

ggt gaa ctc acc aag ctc ata cgg cag cag cac gag atg tgc ctg aac    2017
Gly Glu Leu Thr Lys Leu Ile Arg Gln Gln His Glu Met Cys Leu Asn
            580                 585                 590

cac tca aac caa ttc acc cag ctg ggc aac atc act gaa acc acc aag    2065
His Ser Asn Gln Phe Thr Gln Leu Gly Asn Ile Thr Glu Thr Thr Lys
            595                 600                 605

ttt gaa aag ttg gcg gag gac tgt aag cgg agc atg gac att ctg aag    2113
Phe Glu Lys Leu Ala Glu Asp Cys Lys Arg Ser Met Asp Ile Leu Lys
            610                 615                 620

caa gcc ttc gtc cgg ggt ctc ccc acg ccc acc gcc cgc ttt gag caa    2161
Gln Ala Phe Val Arg Gly Leu Pro Thr Pro Thr Ala Arg Phe Glu Gln
625                 630                 635                 640

agg acc ttc agc gtc atc aag atc ttc cct gac ctc agc agc aac gac    2209
Arg Thr Phe Ser Val Ile Lys Ile Phe Pro Asp Leu Ser Ser Asn Asp
                645                 650                 655

atg ctc ctc ttc atc gtg aag ggc atc aac ttg ccc aca ccc cca gga    2257
Met Leu Leu Phe Ile Val Lys Gly Ile Asn Leu Pro Thr Pro Pro Gly
            660                 665                 670

ctg tcc cct ggc gat ctg gat gtc ttt gtt cgg ttt gac ttc ccc tat    2305
Leu Ser Pro Gly Asp Leu Asp Val Phe Val Arg Phe Asp Phe Pro Tyr
            675                 680                 685

ccc aac gtg gaa gaa gct cag aaa gac aag acc agt gtg atc aag aac    2353
Pro Asn Val Glu Glu Ala Gln Lys Asp Lys Thr Ser Val Ile Lys Asn
    690                 695                 700
```

350

```
aca gac tcc cct gag ttc aag gag cag ttc aaa ctc tgc atc aac cgc    2401
Thr Asp Ser Pro Glu Phe Lys Glu Gln Phe Lys Leu Cys Ile Asn Arg
705             710             715             720

agc cac cgt ggc ttc cga agg gcc atc cag acc aag ggc atc aag ttc    2449
Ser His Arg Gly Phe Arg Arg Ala Ile Gln Thr Lys Gly Ile Lys Phe
            725             730             735

gaa gtg gtt cac aag ggg ggg ctg ttc aag act gac cgg gtg ctg ggg    2497
Glu Val Val His Lys Gly Gly Leu Phe Lys Thr Asp Arg Val Leu Gly
            740             745             750

aca gcc cag ctg aag ctg gat gca ctg gag ata gca tgt gag gtc cgg    2545
Thr Ala Gln Leu Lys Leu Asp Ala Leu Glu Ile Ala Cys Glu Val Arg
        755             760             765

gag atc ctt gag gtc ctg gat ggt cgc cgg ccc aca ggg ggg cga ctg    2593
Glu Ile Leu Glu Val Leu Asp Gly Arg Arg Pro Thr Gly Gly Arg Leu
        770             775             780

gag gta atg gtc cgg att cgg gag cca ctg aca gcc cag cag ttg gag    2641
Glu Val Met Val Arg Ile Arg Glu Pro Leu Thr Ala Gln Gln Leu Glu
785             790             795             800

acg acg aca gag agg tgg ctg gtc att gac cct gtg ccg gca gct gtg    2689
Thr Thr Thr Glu Arg Trp Leu Val Ile Asp Pro Val Pro Ala Ala Val
            805             810             815

ccc aca cag gtt gct ggg ccc aaa ggg aag gcc cct cct gtg cct gcc    2737
Pro Thr Gln Val Ala Gly Pro Lys Gly Lys Ala Pro Pro Val Pro Ala
            820             825             830

cct gca agg gag tca ggg aac aga tca gcc cgg ccc ctg cat agc ctc    2785
Pro Ala Arg Glu Ser Gly Asn Arg Ser Ala Arg Pro Leu His Ser Leu
        835             840             845

agt gtg ctg gcg ttt gac caa gag cgt ctg gag cgg aag atc ctg gcc    2833
Ser Val Leu Ala Phe Asp Gln Glu Arg Leu Glu Arg Lys Ile Leu Ala
    850             855             860

ctc agg cag gcg cgg cgg ccg gtg ccc cca gaa gtg gcc cag cag tac    2881
Leu Arg Gln Ala Arg Arg Pro Val Pro Pro Glu Val Ala Gln Gln Tyr
865             870             875             880

cag gac atc atg caa cgc agc cag tgg cag agg gca cag ctg gag cag    2929
Gln Asp Ile Met Gln Arg Ser Gln Trp Gln Arg Ala Gln Leu Glu Gln
            885             890             895

ggg ggt gtg ggc atc cga cgg gaa tac aca gcc cag ctg gag cgg cag    2977
Gly Gly Val Gly Ile Arg Arg Glu Tyr Thr Ala Gln Leu Glu Arg Gln
            900             905             910

ctg cag ttc tac acg gag gct gcc cgg cgc ctg ggc aac gat ggc agc    3025
Leu Gln Phe Tyr Thr Glu Ala Ala Arg Arg Leu Gly Asn Asp Gly Ser
        915             920             925

agg gat gct gca aag gag gcg ctc tat agg cgg aat ctg gta ggg agt    3073
```

351

```
Arg Asp Ala Ala Lys Glu Ala Leu Tyr Arg Arg Asn Leu Val Gly Ser
    930                 935                 940

gag ctg cag cgg ctc cgc agg tgaggagccc atggggcggg cagcccccag      3124
Glu Leu Gln Arg Leu Arg Arg
945                 950

aaagcgggca gcaggccccg ataccgggaa gagccgacac agccacgaac cagacaagca 3184

gacaatcagc ggacaatcgg ttctggactc acccctcatc cgggccccca gccccgccag 3244

agcctccgtg gctgcgggtg ttgggaacca tgcctgccag ccagtatgtg cccctcaccc 3304

aggcctggct gggccctgga gagtcctgtt tgcacagccc aggggtgtcc ggcctctggc 3364

ccgccccgga gcagggaggg cggctggggc caagccccga gggcccctgc aagcacttta 3424

cttcctgttc ctccccagcc ttaaccccaa agccctcctg caccccaaag aagccactga 3484

ggctggccga gccacactgt ctccccaggg gcgtcgacct ggcccagctg ggtccccagg 3544

ccagcacatg gaataaaata gccagggcca cactc                             3579
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<210> 172
<211> 951
<212> PRT
<213> Homo sapiens

<400> 172

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Met His Lys Arg Lys Gly Pro Pro Gly Pro Pro Gly Arg Gly Ala Ala
  1               5                  10                  15

Ala Ala Arg Gln Leu Gly Leu Leu Val Asp Leu Ser Pro Asp Gly Leu
             20                  25                  30

Met Ile Pro Glu Asp Gly Ala Asn Asp Glu Glu Leu Glu Ala Glu Phe
         35                  40                  45

Leu Ala Leu Val Gly Gly Gln Pro Pro Ala Leu Glu Lys Leu Lys Gly
     50                  55                  60

Lys Gly Pro Leu Pro Met Glu Ala Ile Glu Lys Met Ala Ser Leu Cys
 65                  70                  75                  80

Met Arg Asp Pro Asp Glu Asp Glu Glu Glu Gly Thr Asp Glu Asp Asp
                 85                  90                  95

Leu Glu Ala Asp Asp Asp Leu Leu Ala Glu Leu Asn Glu Val Leu Gly
             100                 105                 110

Glu Glu Gln Lys Ala Ser Glu Thr Pro Pro Pro Val Ala Gln Pro Lys
             115                 120                 125

Pro Glu Ala Pro His Pro Gly Leu Glu Thr Thr Leu Gln Glu Arg Leu
             130                 135                 140
```

```
Ala Leu Tyr Gln Thr Ala Ile Glu Ser Ala Arg Gln Ala Gly Asp Ser
145             150             155             160

Ala Lys Met Arg Arg Tyr Asp Arg Gly Leu Lys Thr Leu Glu Asn Leu
            165             170             175

Leu Ala Ser Ile Arg Lys Gly Asn Ala Ile Asp Glu Ala Asp Ile Pro
            180             185             190

Pro Pro Val Ala Ile Gly Lys Gly Pro Ala Ser Thr Pro Thr Tyr Ser
            195             200             205

Pro Ala Pro Thr Gln Pro Ala Pro Arg Ile Ala Ser Ala Pro Glu Pro
    210             215             220

Arg Val Thr Leu Glu Gly Pro Ser Ala Thr Ala Pro Ala Ser Ser Pro
225             230             235             240

Gly Leu Ala Lys Pro Gln Met Pro Pro Gly Pro Cys Ser Pro Gly Pro
            245             250             255

Leu Ala Gln Leu Gln Ser Arg Gln Arg Asp Tyr Lys Leu Ala Ala Leu
            260             265             270

His Ala Lys Gln Gln Gly Asp Thr Thr Ala Ala Ala Arg His Phe Arg
    275             280             285

Val Ala Lys Ser Phe Asp Ala Val Leu Glu Ala Leu Ser Arg Gly Glu
    290             295             300

Pro Val Asp Leu Ser Cys Leu Pro Pro Pro Pro Asp Gln Leu Pro Pro
305             310             315             320

Asp Pro Pro Ser Pro Pro Ser Gln Pro Pro Thr Pro Ala Thr Ala Pro
            325             330             335

Ser Thr Thr Glu Val Pro Pro Pro Pro Arg Thr Leu Leu Glu Ala Leu
            340             345             350

Glu Gln Arg Met Glu Arg Tyr Gln Val Ala Ala Ala Gln Ala Lys Ser
    355             360             365

Lys Gly Asp Gln Arg Lys Ala Arg Met His Glu Arg Ile Val Lys Gln
    370             375             380

Tyr Gln Asp Ala Ile Arg Ala His Lys Ala Gly Arg Ala Val Asp Val
385             390             395             400

Ala Glu Leu Pro Val Pro Pro Gly Phe Pro Pro Ile Gln Gly Leu Glu
            405             410             415

Ala Thr Lys Pro Thr Gln Gln Ser Leu Val Gly Val Leu Glu Thr Ala
            420             425             430

Met Lys Leu Ala Asn Gln Asp Glu Gly Pro Glu Asp Glu Glu Asp Glu
    435             440             445
```

353

```
Val Pro Lys Lys Gln Asn Ser Pro Val Ala Pro Thr Ala Gln Pro Lys
    450             455             460

Ala Pro Pro Ser Arg Thr Pro Gln Ser Gly Ser Ala Pro Thr Ala Lys
465             470             475             480

Ala Pro Pro Lys Ala Thr Ser Thr Arg Ala Gln Gln Gln Leu Ala Phe
            485             490             495

Leu Glu Gly Arg Lys Lys Gln Leu Leu Gln Ala Ala Leu Arg Ala Lys
            500             505             510

Gln Lys Asn Asp Val Glu Gly Ala Lys Met His Leu Arg Gln Ala Lys
            515             520             525

Gly Leu Glu Pro Met Leu Glu Ala Ser Arg Asn Gly Leu Pro Val Asp
    530             535             540

Ile Thr Lys Val Pro Pro Ala Pro Val Asn Lys Asp Asp Phe Ala Leu
545             550             555             560

Val Gln Arg Pro Gly Pro Gly Leu Ser Gln Glu Ala Ala Arg Arg Tyr
            565             570             575

Gly Glu Leu Thr Lys Leu Ile Arg Gln Gln His Glu Met Cys Leu Asn
            580             585             590

His Ser Asn Gln Phe Thr Gln Leu Gly Asn Ile Thr Glu Thr Thr Lys
            595             600             605

Phe Glu Lys Leu Ala Glu Asp Cys Lys Arg Ser Met Asp Ile Leu Lys
    610             615             620

Gln Ala Phe Val Arg Gly Leu Pro Thr Pro Thr Ala Arg Phe Glu Gln
625             630             635             640

Arg Thr Phe Ser Val Ile Lys Ile Phe Pro Asp Leu Ser Ser Asn Asp
            645             650             655

Met Leu Leu Phe Ile Val Lys Gly Ile Asn Leu Pro Thr Pro Pro Gly
            660             665             670

Leu Ser Pro Gly Asp Leu Asp Val Phe Val Arg Phe Asp Phe Pro Tyr
            675             680             685

Pro Asn Val Glu Glu Ala Gln Lys Asp Lys Thr Ser Val Ile Lys Asn
    690             695             700

Thr Asp Ser Pro Glu Phe Lys Glu Gln Phe Lys Leu Cys Ile Asn Arg
705             710             715             720

Ser His Arg Gly Phe Arg Arg Ala Ile Gln Thr Lys Gly Ile Lys Phe
            725             730             735

Glu Val Val His Lys Gly Gly Leu Phe Lys Thr Asp Arg Val Leu Gly
            740             745             750
```

354

```
Thr Ala Gln Leu Lys Leu Asp Ala Leu Glu Ile Ala Cys Glu Val Arg
        755             760             765

Glu Ile Leu Glu Val Leu Asp Gly Arg Arg Pro Thr Gly Gly Arg Leu
    770             775             780

Glu Val Met Val Arg Ile Arg Glu Pro Leu Thr Ala Gln Gln Leu Glu
785             790             795             800

Thr Thr Thr Glu Arg Trp Leu Val Ile Asp Pro Val Pro Ala Ala Val
            805             810             815

Pro Thr Gln Val Ala Gly Pro Lys Gly Lys Ala Pro Pro Val Pro Ala
        820             825             830

Pro Ala Arg Glu Ser Gly Asn Arg Ser Ala Arg Pro Leu His Ser Leu
        835             840             845

Ser Val Leu Ala Phe Asp Gln Glu Arg Leu Glu Arg Lys Ile Leu Ala
    850             855             860

Leu Arg Gln Ala Arg Arg Pro Val Pro Pro Glu Val Ala Gln Gln Tyr
865             870             875             880

Gln Asp Ile Met Gln Arg Ser Gln Trp Gln Arg Ala Gln Leu Glu Gln
            885             890             895

Gly Gly Val Gly Ile Arg Arg Glu Tyr Thr Ala Gln Leu Glu Arg Gln
            900             905             910

Leu Gln Phe Tyr Thr Glu Ala Ala Arg Arg Leu Gly Asn Asp Gly Ser
    915             920             925

Arg Asp Ala Ala Lys Glu Ala Leu Tyr Arg Arg Asn Leu Val Gly Ser
    930             935             940

Glu Leu Gln Arg Leu Arg Arg
945             950
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<210> 173
<211> 2796
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (574)..(1683)

<400> 173

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aagcatttcc tattgagacc cccaagagtt cccccggcgg ccctcggctc cagcaagact 60

ttgggccttt tcttgtgtcc tgtttgttaa aggcatgcgg gctccagcat taaagagggc 120

tagtccttaa caaagggaaa gcgataaatg taaataagct cacattttca gaatgagcgg 180
```

tttgcagtaa ggagctgcgg cagcccagag tctgctcttt ttgggctggg ctaacctttc 240

cctgtttttt gtttttttgtt ttgtttttgtt tttgtttttt atggataaaa atatgcgctt 300

ccgaagtgcg agttgccagt ttacacgttt attagctaac tatctacagg catgagcaca 360

ttctctcatc tagcacactc tttcttgggc actcaattga ggaactctct gatcgtctgc 420

ctccagaaaa ttcattgatt atccaagtct cagataaatc tggtgccaga gtttggtttg 480

aactaactaa tgaagaaagc attctctact ggtcctcagt ctcaagagtg gtgaaccccct 540

gcacctagca ggctctctgg gaaaaaaaaa tcc atg ggt gac aga aga ttt att 594
                                    Met Gly Asp Arg Arg Phe Ile
                                    1   5

gac ttc caa ttc caa gat tta aat tca agt ctc aga ccc agg ttg gga 642
Asp Phe Gln Phe Gln Asp Leu Asn Ser Ser Leu Arg Pro Arg Leu Gly
            10   15   20

aat gca act gcc aat aat act tgc att gtt gat gat tcc ttc aag tat 690
Asn Ala Thr Ala Asn Asn Thr Cys Ile Val Asp Asp Ser Phe Lys Tyr
    25   30   35

aat ttg aat ggt gct gtc tat agt gtt gta ttc atc ctg ggt cta ata 738
Asn Leu Asn Gly Ala Val Tyr Ser Val Val Phe Ile Leu Gly Leu Ile
40   45   50   55

acc aac agt gcc tcc ctg ttt gtc ttc tgc ttc cgc atg aaa atg aga 786
Thr Asn Ser Ala Ser Leu Phe Val Phe Cys Phe Arg Met Lys Met Arg
                 60   65   70

agt gag acg gct act ttc atc acc aac ctg gcc ctc tct gat ttg ctt 834
Ser Glu Thr Ala Thr Phe Ile Thr Asn Leu Ala Leu Ser Asp Leu Leu
             75   80   85

ttt gtt tgt acc cta cct ttc aaa ata ttt tac aac ttt aat cgc cac 882
Phe Val Cys Thr Leu Pro Phe Lys Ile Phe Tyr Asn Phe Asn Arg His
         90   95   100

tgg cct ttt ggt gac acc ctc tgt aag atc tca ggg act gcg ttc ctc 930
Trp Pro Phe Gly Asp Thr Leu Cys Lys Ile Ser Gly Thr Ala Phe Leu
    105   110   115

acc aac atc tat ggg agc atg ctc ttc ctc acc tgc atc agt gtg gat 978
Thr Asn Ile Tyr Gly Ser Met Leu Phe Leu Thr Cys Ile Ser Val Asp
120   125   130   135

cgt ttc cta gcc att gtc tat ccc ttc cga tcg cgt acc atc agg acc 1026
Arg Phe Leu Ala Ile Val Tyr Pro Phe Arg Ser Arg Thr Ile Arg Thr
                 140   145   150

agg agg aat tcc gcc att gtg tgc gct gga gtc tgg atc cta gtc ctc 1074
Arg Arg Asn Ser Ala Ile Val Cys Ala Gly Val Trp Ile Leu Val Leu
             155   160   165

agt ggt ggt att tca gct tct ttg ttc tcc acc act aat gtc aac aat 1122

356

```
Ser Gly Gly Ile Ser Ala Ser Leu Phe Ser Thr Thr Asn Val Asn Asn
    170                 175             180

gcg acc acc act tgc ttt gaa ggc ttc tcc aaa cgt gtc tgg aag aca   1170
Ala Thr Thr Thr Cys Phe Glu Gly Phe Ser Lys Arg Val Trp Lys Thr
    185                 190             195

tac ctg tcc aag atc act ata ttc att gaa gtt gtt gga ttc atc att   1218
Tyr Leu Ser Lys Ile Thr Ile Phe Ile Glu Val Val Gly Phe Ile Ile
200                 205             210                 215

cct ctg ata ttg aat gtt tct tgt tct tct gtg gtg ctt aga acc ctc   1266
Pro Leu Ile Leu Asn Val Ser Cys Ser Ser Val Val Leu Arg Thr Leu
                220             225             230

cgc aag cct gca aca ttg tct cag att ggg acc aat aag aaa aaa gtg   1314
Arg Lys Pro Ala Thr Leu Ser Gln Ile Gly Thr Asn Lys Lys Lys Val
                235             240             245

ttg aag atg atc aca gtg cat atg gca gtg ttt gtg gta tgc ttt gta   1362
Leu Lys Met Ile Thr Val His Met Ala Val Phe Val Val Cys Phe Val
                250             255             260

cca tac aac tcc gtt ctc ttt tta tat gcc ttg gta cgc tcc caa gcc   1410
Pro Tyr Asn Ser Val Leu Phe Leu Tyr Ala Leu Val Arg Ser Gln Ala
    265                 270             275

att act aat tgc tta ttg gaa agg ttt gca aag atc atg tac cca att   1458
Ile Thr Asn Cys Leu Leu Glu Arg Phe Ala Lys Ile Met Tyr Pro Ile
280                 285             290                 295

acc ttg tgc ctt gca act ctg aat tgt tgc ttt gat cct ttt atc tat   1506
Thr Leu Cys Leu Ala Thr Leu Asn Cys Cys Phe Asp Pro Phe Ile Tyr
                300             305             310

tac ttc act ctt gaa tcc ttt cag aag tcc ttt tat atc aat aca cat   1554
Tyr Phe Thr Leu Glu Ser Phe Gln Lys Ser Phe Tyr Ile Asn Thr His
                315             320             325

ata agg atg gag tcg ctg ttt aag act gag aca cct ctg acc ccc aaa   1602
Ile Arg Met Glu Ser Leu Phe Lys Thr Glu Thr Pro Leu Thr Pro Lys
                330             335             340

cct tcc ctt cca gct atc caa gag gaa gtt agt gat caa aca aca aat   1650
Pro Ser Leu Pro Ala Ile Gln Glu Glu Val Ser Asp Gln Thr Thr Asn
    345                 350             355

aat ggt ggt gaa tta atg ctg gaa tcc acc ttc taggtaccag aattgtcttt  1703
Asn Gly Gly Glu Leu Met Leu Glu Ser Thr Phe
360                 365             370

caggttcagc tacagtgtct cttatgattt ttttcctatg ctataaatag gagaaacaaa  1763

ttgaagctaa tgatactgag aatagagtaa tgtaccaaat gcagtcagat acatttgttt  1823

gaacactatt gtacatattc tgttttgttc agtaattata ggtcaagtct aattacaaca  1883
```

357

```
accaaaacag atcagcctct tctgttgagt tgacttttca ttacctaaat gaccagtggt 1943

cttgactttt agtgatgtga gggttatttt taaacttaaa aaaaaaggca ttccagtaat 2003

tttggtaatt gggttgggcc tataaatata gaacaaattc agggattatt taaaaacatc 2063

tgtgttacta ctgatatatg ctagtatttt tttccttttt tgaattaata ttgaatttat 2123

tttaaaaaaa gaactatttt tacctaatct taataagaca tactgagaaa gagaaatgtg 2183

ttgaatttta aaatattggc aaattttacc tagattttaa aaacctaaat gaagtgtttg 2243

aatgaatatg ggtgggaaat ttggaattta gacaacattt acgcatttat aataaccaca 2303

attagtgtca gcttttaaaa ctttcttttt aaaataattc tagaattttc atatgaaatt 2363

gttaatcctg aaaggtgcta cttatgtgcc tggcaggtat aaaatggaaa actcataaaa 2423

ttaacagtgt caatttaaaa aaaaaaaaac tttaagcaac actatattat ttcttaagat 2483

tttcatttat cctttatggg ggtgggggatt ggcttgtaga aaatatttat tcttcatgtt 2543

aaatgttggg gacacattac agccagagag ctacagtatt tgtgcccagg tcaggagtaa 2603

attgaaaaag taagtgaata gaatagtagc agcaagatat cttagagctt atattagtag 2663

tttttaaggt ggtggttaga tagctgtaat tttgaaatcc atactctctt ctgtacattt 2723

tggagcacat tgtagccaag gcgctgctga atttgtgctc aggtcgggag catattgaaa 2783

aagatgtgta cat                                                    2796
```

<210> 174
<211> 370
<212> PRT
<213> Homo sapiens

<400> 174

```
Met Gly Asp Arg Arg Phe Ile Asp Phe Gln Phe Gln Asp Leu Asn Ser
  1               5                  10                  15

Ser Leu Arg Pro Arg Leu Gly Asn Ala Thr Ala Asn Asn Thr Cys Ile
             20                  25                  30

Val Asp Asp Ser Phe Lys Tyr Asn Leu Asn Gly Ala Val Tyr Ser Val
         35                  40                  45

Val Phe Ile Leu Gly Leu Ile Thr Asn Ser Ala Ser Leu Phe Val Phe
     50                  55                  60

Cys Phe Arg Met Lys Met Arg Ser Glu Thr Ala Thr Phe Ile Thr Asn
 65                  70                  75                  80

Leu Ala Leu Ser Asp Leu Leu Phe Val Cys Thr Leu Pro Phe Lys Ile
                 85                  90                  95
```

358

```
Phe Tyr Asn Phe Asn Arg His Trp Pro Phe Gly Asp Thr Leu Cys Lys
        100             105             110

Ile Ser Gly Thr Ala Phe Leu Thr Asn Ile Tyr Gly Ser Met Leu Phe
        115             120             125

Leu Thr Cys Ile Ser Val Asp Arg Phe Leu Ala Ile Val Tyr Pro Phe
        130             135             140

Arg Ser Arg Thr Ile Arg Thr Arg Arg Asn Ser Ala Ile Val Cys Ala
145             150             155             160

Gly Val Trp Ile Leu Val Leu Ser Gly Gly Ile Ser Ala Ser Leu Phe
            165             170             175

Ser Thr Thr Asn Val Asn Asn Ala Thr Thr Thr Cys Phe Glu Gly Phe
            180             185             190

Ser Lys Arg Val Trp Lys Thr Tyr Leu Ser Lys Ile Thr Ile Phe Ile
            195             200             205

Glu Val Val Gly Phe Ile Ile Pro Leu Ile Leu Asn Val Ser Cys Ser
        210             215             220

Ser Val Val Leu Arg Thr Leu Arg Lys Pro Ala Thr Leu Ser Gln Ile
225             230             235             240

Gly Thr Asn Lys Lys Lys Val Leu Lys Met Ile Thr Val His Met Ala
            245             250             255

Val Phe Val Val Cys Phe Val Pro Tyr Asn Ser Val Leu Phe Leu Tyr
            260             265             270

Ala Leu Val Arg Ser Gln Ala Ile Thr Asn Cys Leu Leu Glu Arg Phe
            275             280             285

Ala Lys Ile Met Tyr Pro Ile Thr Leu Cys Leu Ala Thr Leu Asn Cys
        290             295             300

Cys Phe Asp Pro Phe Ile Tyr Tyr Phe Thr Leu Glu Ser Phe Gln Lys
305             310             315             320

Ser Phe Tyr Ile Asn Thr His Ile Arg Met Glu Ser Leu Phe Lys Thr
            325             330             335

Glu Thr Pro Leu Thr Pro Lys Pro Ser Leu Pro Ala Ile Gln Glu Glu
            340             345             350

Val Ser Asp Gln Thr Thr Asn Asn Gly Gly Glu Leu Met Leu Glu Ser
            355             360             365

Thr Phe
    370
```

<210> 175

<211> 2299
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (67)..(1176)

<400> 175
cctaccggtc catagtgtca gagtggtgaa cccctgcagc cagcaggcct cctgaaaaaa 60

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aagtcc atg ggt gac aga aga ttc att gac ttc caa ttc caa gat tca        108
       Met Gly Asp Arg Arg Phe Ile Asp Phe Gln Phe Gln Asp Ser
       1               5                   10

aat tca agc ctc aga ccc agg ttg ggc aat gct act gcc aat aat act        156
Asn Ser Ser Leu Arg Pro Arg Leu Gly Asn Ala Thr Ala Asn Asn Thr
15                  20                  25                  30

tgc att gtt gat gat tcc ttc aag tat aat ctc aat ggt gct gtc tac        204
Cys Ile Val Asp Asp Ser Phe Lys Tyr Asn Leu Asn Gly Ala Val Tyr
                35                  40                  45

agt gtt gta ttc atc ttg ggt ctg ata acc aac agt gtc tct ctg ttt        252
Ser Val Val Phe Ile Leu Gly Leu Ile Thr Asn Ser Val Ser Leu Phe
            50                  55                  60

gtc ttc tgt ttc cgc atg aaa atg aga agt gag act gct att ttt atc        300
Val Phe Cys Phe Arg Met Lys Met Arg Ser Glu Thr Ala Ile Phe Ile
        65                  70                  75

acc aat cta gct gtc tct gat ttg ctt ttt gtc tgt aca cta cct ttt        348
Thr Asn Leu Ala Val Ser Asp Leu Leu Phe Val Cys Thr Leu Pro Phe
        80                  85                  90

aaa ata ttt tac aac ttc aac cgc cac tgg cct ttt ggt gac acc ctc        396
Lys Ile Phe Tyr Asn Phe Asn Arg His Trp Pro Phe Gly Asp Thr Leu
95                  100                 105                 110

tgc aag atc tct gga act gca ttc ctt acc aac atc tat ggg agc atg        444
Cys Lys Ile Ser Gly Thr Ala Phe Leu Thr Asn Ile Tyr Gly Ser Met
                115                 120                 125

ctc ttt ctc acc tgt att agt gtg gat cgt ttc ctg gcc att gtc tat        492
Leu Phe Leu Thr Cys Ile Ser Val Asp Arg Phe Leu Ala Ile Val Tyr
            130                 135                 140

cct ttt cga tct cgt act att agg act agg agg aat tct gcc att gtg        540
Pro Phe Arg Ser Arg Thr Ile Arg Thr Arg Arg Asn Ser Ala Ile Val
            145                 150                 155

tgt gct ggt gtc tgg atc cta gtc ctc agt ggc ggt att tca gcc tct        588
Cys Ala Gly Val Trp Ile Leu Val Leu Ser Gly Gly Ile Ser Ala Ser
        160                 165                 170

ttg ttt tcc acc act aat gtc aac aat gca acc acc acc tgc ttt gaa        636
Leu Phe Ser Thr Thr Asn Val Asn Asn Ala Thr Thr Thr Cys Phe Glu
```

360

```
     175                 180                 185                 190

ggc ttc tcc aaa cgt gtc tgg aag act tat tta tcc aag atc aca ata   684
Gly Phe Ser Lys Arg Val Trp Lys Thr Tyr Leu Ser Lys Ile Thr Ile
            195             200             205

ttt att gaa gtt gtt ggg ttt atc att cct cta ata ttg aat gtc tct   732
Phe Ile Glu Val Val Gly Phe Ile Ile Pro Leu Ile Leu Asn Val Ser
            210             215             220

tgc tct tct gtg gtg ctg aga act ctt cgc aag cct gct act ctg tct   780
Cys Ser Ser Val Val Leu Arg Thr Leu Arg Lys Pro Ala Thr Leu Ser
            225             230             235

caa att ggg acc aat aag aaa aaa gta ctg aaa atg atc aca gta cat   828
Gln Ile Gly Thr Asn Lys Lys Lys Val Leu Lys Met Ile Thr Val His
            240             245             250

atg gca gtc ttt gtg gta tgc ttt gta ccc tac aac tct gtc ctc ttc   876
Met Ala Val Phe Val Val Cys Phe Val Pro Tyr Asn Ser Val Leu Phe
255             260             265             270

ttg tat gcc ctg gtg cgc tcc caa gct att act aat tgc ttt ttg gaa   924
Leu Tyr Ala Leu Val Arg Ser Gln Ala Ile Thr Asn Cys Phe Leu Glu
                275             280             285

aga ttt gca aag atc atg tac cca atc acc ttg tgc ctt gca act ctg   972
Arg Phe Ala Lys Ile Met Tyr Pro Ile Thr Leu Cys Leu Ala Thr Leu
            290             295             300

aac tgt tgt ttt gac cct ttc atc tat tac ttc acc ctt gaa tcc ttt  1020
Asn Cys Cys Phe Asp Pro Phe Ile Tyr Tyr Phe Thr Leu Glu Ser Phe
            305             310             315

cag aag tcc ttc tac atc aat gcc cac atc aga atg gag tcc ctg ttt  1068
Gln Lys Ser Phe Tyr Ile Asn Ala His Ile Arg Met Glu Ser Leu Phe
            320             325             330

aag act gaa aca cct ttg acc aca aag cct tcc ctt cca gct att caa  1116
Lys Thr Glu Thr Pro Leu Thr Thr Lys Pro Ser Leu Pro Ala Ile Gln
335             340             345             350

gag gaa gtg agt gat caa aca aca aat aat ggt ggt gaa tta atg cta  1164
Glu Glu Val Ser Asp Gln Thr Thr Asn Asn Gly Gly Glu Leu Met Leu
            355             360             365

gaa tcc acc ttt taggtatgag aaatgtgttc aggtccagat atggtttctc     1216
Glu Ser Thr Phe
            370

ctataatttt tcctatgcta taaactaaag atttgaagct aatgatactg agaataatgc 1276

accaaatcca gtcagataca tttgtttgaa ggtatactgt agagttttta ttgctgtttt 1336

gttcagtaat tataggtcaa atctaattac aacaaccaag atggattgcc aaactcttct 1396

gcttggttgg aatttcattg tatcgcatta tccaggtggc tagtggcatt tgataatata 1456
```

361

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gagatgactt tgaaacttc aaaaaggtat ttctattcca atgatatttg gtaattaggt 1516

tgggcctata aatatagaac aaaattcaggg atttttaaaa aattgtgtta ctactgatat 1576

atgctagttt tattttattt ttttggactg tcattgagtt tattttagca caagaatatt 1636

tttagcctaa cattattaat aagaaatgtg tcaaattttt aacattggta aaatatgtta 1696

tgtgcatttt gaaaacagaa aacaaattgc gttggcatgt acgtgggtgg gaagaaaaag 1756

aaaattaaca ggatttacac aattataatc accagcagtg tgagtttaaa aaacttcgtt 1816

gttttttacac caaattaaaa ttttcatgtc aaacttcaaa gccagaaagc tgctaaatac 1876

gtgtctggca ggtaaaagct ggaaaattac ttaaaacagg aaagtgtcaa taaaaaaact 1936

tgagcaacac caacatattt tttcttaaaa tgtcacgtta tcttcatttt gggaaactag 1996

gttctataaa atatttatcc tccctgttat actttggagc acagcacagc cagaaagggg 2056

ctgcatttgt gcccaggtca ggagcaaatt gaaaaaaaaa ataaagtaat actaaaaaat 2116

caaactataa acccaaaaca tttattaaaa cctgaattaa tccttttgg agggaggagt 2176

agagatatat aacctgaaaa tacttattct ttcttatcga attttggagc ctaatatagc 2236

caggagctgc tgaatttgtg cccctggatt ggaaccaaat aaaaaaaaaa aaaaaaatt 2296

cct                                                                  2299
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<210> 176
<211> 370
<212> PRT
<213> Homo sapiens

<400> 176

Met	Gly	Asp	Arg	Arg	Phe	Ile	Asp	Phe	Gln	Phe	Gln	Asp	Ser	Asn	Ser
1				5					10					15	

Ser	Leu	Arg	Pro	Arg	Leu	Gly	Asn	Ala	Thr	Ala	Asn	Asn	Thr	Cys	Ile
			20				25					30			

Val	Asp	Asp	Ser	Phe	Lys	Tyr	Asn	Leu	Asn	Gly	Ala	Val	Tyr	Ser	Val
		35				40					45				

Val	Phe	Ile	Leu	Gly	Leu	Ile	Thr	Asn	Ser	Val	Ser	Leu	Phe	Val	Phe
	50					55				60					

Cys	Phe	Arg	Met	Lys	Met	Arg	Ser	Glu	Thr	Ala	Ile	Phe	Ile	Thr	Asn
65				70					75					80	

Leu	Ala	Val	Ser	Asp	Leu	Leu	Phe	Val	Cys	Thr	Leu	Pro	Phe	Lys	Ile
				85					90					95	

Phe	Tyr	Asn	Phe	Asn	Arg	His	Trp	Pro	Phe	Gly	Asp	Thr	Leu	Cys	Lys

362

```
                 100                    105                    110
Ile Ser Gly Thr Ala Phe Leu Thr Asn Ile Tyr Gly Ser Met Leu Phe
        115                 120                 125
Leu Thr Cys Ile Ser Val Asp Arg Phe Leu Ala Ile Val Tyr Pro Phe
        130                 135                 140
Arg Ser Arg Thr Ile Arg Thr Arg Arg Asn Ser Ala Ile Val Cys Ala
145                 150                 155                 160
Gly Val Trp Ile Leu Val Leu Ser Gly Gly Ile Ser Ala Ser Leu Phe
                165                 170                 175
Ser Thr Thr Asn Val Asn Asn Ala Thr Thr Thr Cys Phe Glu Gly Phe
            180                 185                 190
Ser Lys Arg Val Trp Lys Thr Tyr Leu Ser Lys Ile Thr Ile Phe Ile
        195                 200                 205
Glu Val Val Gly Phe Ile Ile Pro Leu Ile Leu Asn Val Ser Cys Ser
    210                 215                 220
Ser Val Val Leu Arg Thr Leu Arg Lys Pro Ala Thr Leu Ser Gln Ile
225                 230                 235                 240
Gly Thr Asn Lys Lys Lys Val Leu Lys Met Ile Thr Val His Met Ala
            245                 250                 255
Val Phe Val Val Cys Phe Val Pro Tyr Asn Ser Val Leu Phe Leu Tyr
            260                 265                 270
Ala Leu Val Arg Ser Gln Ala Ile Thr Asn Cys Phe Leu Glu Arg Phe
        275                 280                 285
Ala Lys Ile Met Tyr Pro Ile Thr Leu Cys Leu Ala Thr Leu Asn Cys
    290                 295                 300
Cys Phe Asp Pro Phe Ile Tyr Tyr Phe Thr Leu Glu Ser Phe Gln Lys
305                 310                 315                 320
Ser Phe Tyr Ile Asn Ala His Ile Arg Met Glu Ser Leu Phe Lys Thr
            325                 330                 335
Glu Thr Pro Leu Thr Thr Lys Pro Ser Leu Pro Ala Ile Gln Glu Glu
            340                 345                 350
Val Ser Asp Gln Thr Thr Asn Asn Gly Gly Glu Leu Met Leu Glu Ser
            355                 360                 365
Thr Phe
    370
```

<210> 177
<211> 973

363

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<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (30)..(416)

<400> 177
cagacagcgg cgggcgcagg acgtgcact atg gct cgg ggc tcg ctg cgc cgg    53
                                 Met Ala Arg Gly Ser Leu Arg Arg
                                  1               5

ttg ctg cgg ctc ctc gtg ctg ggg ctc tgg ctg gcg ttg ctg cgc tcc   101
Leu Leu Arg Leu Leu Val Leu Gly Leu Trp Leu Ala Leu Leu Arg Ser
        10              15              20

gtg gcc ggg gag caa gcg cca ggc acc gcc ccc tgc tcc cgc ggc agc   149
Val Ala Gly Glu Gln Ala Pro Gly Thr Ala Pro Cys Ser Arg Gly Ser
 25              30              35              40

tcc tgg agc gcg gac ctg gac aag tgc atg gac tgc gcg tct tgc agg   197
Ser Trp Ser Ala Asp Leu Asp Lys Cys Met Asp Cys Ala Ser Cys Arg
                 45              50              55

gcg cga ccg cac agc gac ttc tgc ctg ggc tgc gct gca gca cct cct   245
Ala Arg Pro His Ser Asp Phe Cys Leu Gly Cys Ala Ala Ala Pro Pro
             60              65              70

gcc ccc ttc cgg ctg ctt tgg ccc atc ctt ggg ggc gct ctg agc ctg   293
Ala Pro Phe Arg Leu Leu Trp Pro Ile Leu Gly Gly Ala Leu Ser Leu
         75              80              85

acc ttc gtg ctg ggg ctg ctt tct ggc ttt ttg gtc tgg aga cga tgc   341
Thr Phe Val Leu Gly Leu Leu Ser Gly Phe Leu Val Trp Arg Arg Cys
         90              95             100

cgc agg aga gag aag ttc acc acc ccc ata gag gag acc ggc gga gag   389
Arg Arg Arg Glu Lys Phe Thr Thr Pro Ile Glu Glu Thr Gly Gly Glu
105              110             115             120

ggc tgc cca gct gtg gcg ctg atc cag tgacaatgtg cccctgcca           436
Gly Cys Pro Ala Val Ala Leu Ile Gln
                 125

gccggggctc gcccactcat cattcattca tccattctag agccagtctc tgcctcccag 496

acgcggcggg agccaagctc ctccaaccac aagggggggtg gggggcggtg aatcacctcc 556

gaggcctggg tccagggttc aggggaacct tccaaggtgt ctggttgccc tgcctctggc 616

tccagaacag aaagggagcc tcacgctggc tcacacaaaa cagctgacac tgactaagga 676

actgcagcat ttgcacaggg gaggggggtg ccctccttcc tagaggccct gggggccagg 736

ctgacttggg gggcagactt gacactaggc cccactcact cagatgtcct gaaattccac 796

cacggggggtc accctggggg gttagggacc tattttttaac actaggggggc tggcccacta 856
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364

ggagggctgg ccctaagata cagacccccc caactcccca aagcggggag gagatattta 916

ttttggggag agtttggagg ggagggagaa tttattaata aaagaatctt taactttt   973

<210> 178
<211> 129
<212> PRT
<213> Homo sapiens

<400> 178
Met Ala Arg Gly Ser Leu Arg Arg Leu Leu Arg Leu Leu Val Leu Gly
 1   5   10   15

Leu Trp Leu Ala Leu Leu Arg Ser Val Ala Gly Glu Gln Ala Pro Gly
            20   25   30

Thr Ala Pro Cys Ser Arg Gly Ser Ser Trp Ser Ala Asp Leu Asp Lys
            35   40   45

Cys Met Asp Cys Ala Ser Cys Arg Ala Arg Pro His Ser Asp Phe Cys
        50   55   60

Leu Gly Cys Ala Ala Ala Pro Pro Ala Pro Phe Arg Leu Leu Trp Pro
 65   70   75   80

Ile Leu Gly Gly Ala Leu Ser Leu Thr Phe Val Leu Gly Leu Leu Ser
                85   90   95

Gly Phe Leu Val Trp Arg Arg Cys Arg Arg Arg Glu Lys Phe Thr Thr
            100   105   110

Pro Ile Glu Glu Thr Gly Gly Glu Gly Cys Pro Ala Val Ala Leu Ile
            115   120   125

Gln

<210> 179
<211> 3
<212> DNA
<213> Homo Sapiens

<400> 179
000

<210> 180
<211> 3
<212> PRT
<213> Homo Sapiens

<400> 180
000

<210> 181
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> 5' Primer used in the screening of cDNA encoding the protein capable of
activating NF-K B

<400> 181
cttctgctct aaaagctgcg   20

<210> 182
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> 3' Primer used in the screening of cDNA encoding the protein capable of
activating NF-K B

<400> 182
cgacctgcag ctcgagcaca   20